isemantic
International Seminar on Application for Technology of Information and Communication

UNIVERSITAS DIAN NUSWANTORO
UDINUS
SEMARANG

PROGRAM BOOK

"Technology 4.0 for Smart Ecosystem: A New Way of Doing Digital Business"

17 - 18 September 2022

Universitas Dian Nuswantoro Semarang

2022 International Seminar on Application for Technology of Information and Communication (iSemantic)

IEEE Universitas Dian Nuswantoro Student Branch
IEEE INDONESIA SECTION
IEEE PES Power & Energy Society® INDONESIA
IES The IEEE Industrial Electronics Society

Organized by: UNIVERSITAS DIAN NUSWANTORO UDINUS SEMARANG LPPM UDINUS UNIVERSITAS DIAN NUSWANTORO UDINUS SEMARANG
Computer Science Faculty
Engineering Faculty

TABLE OF CONTENT

isemantic

International Seminar on Application for Technology of Information and Communication

Organized by: LPPM UDINUS

Computer Science Faculty
Engineering Faculty

TABLE OF CONTENTS

GREETINGS

isemantic

International Seminar on Application for Technology of Information and Communication

Greetings from Chair

Dr. Eng. Farrikh Alzami, M.Kom
Chair of iSemantic 2022, Universitas Dian Nuswantoro

Bismillahirrohmanirrohim

Assalamu'alaikum wr. wb

Good morning all authors, participants and honorable guests.

The distinguished Rector of Universitas Dian Nuswantoro, Prof. Dr. Ir. Edi Noersasongko, M.Kom;

The distinguished Representative of IEEE Indonesian Section, Dr. Ing. Wahyudi Hasbi as Chair, IEEE Indonesia Section;

The distinguished Representative of IEEE Power & Energy Society as financial sponsor of iSemantic 2022, Prof. Ir. Arif Nur Afandi, Ph.D as Chair, IEEE Power & Energy Society;

Dearest honorable guests and all representatives from universities and other institutions;

The distinguished Keynote Speakers and Dearest authors and participants for today's webinar conference.

I am pleased to welcome you to the webinar, on International Conference to discuss the scope of Application for Technology of Information and Communication.

I am highly honored to take this opportunity, on behalf of all committee and organizer, to welcome all of you today to this 7th International Seminar on Application for Technology of Information and Communication (iSemantic 2022)

The iSemantic 2022 international conference will face big challenges, because it is still in a pandemic period, and this does not create an obstacle for science to continue to grow. Another challenge is the quality of research. The standard of research in iSemantic 2022 is the best research. All thanks to supporting from IEEE Indonesia Section and IEEE Power & Energy Society as financial sponsor and the hard work of the iSemantic 2022 committee to make this happen.

Last year, we have 76 papers accepted, out of 148 submitted papers, from 7 different countries including, United Arab Emirates, Taiwan, USA, Iraq, Ireland, Malaysia and Indonesia All the 76 papers presented last year have been successfully published in IEEE Xplore and indexed by SCOPUS.

And now with new topic “Technology 4.0 for Smart Ecosystem: A New Way of Doing Digital Business”, there are 88 papers accepted, out of 150 submitted papers from 13 different countries including, India, Taiwan, Bangladesh, China, Uni Arab Emirates, Philippines, South Africa, Australia, United States of America, Iraq, Malaysia, Rwanda and Indonesia and they are ready to be presented by the authors in the conference today.

It is also my honor today to have four great persons who have agreed to be the Keynote Speakers for this webinar. The distinguished 4 persons are as follows:

1. Dr. Shay Bahramirad, the Vice President Engineering and Smart Grid ComEd (Oakbrook Terrace, IL)
2. Prof. Mohd. Faizal Bin Abdollah, from Associate Professor at Faculty of Information and Communication Technology University Teknikal Malaysia Melaka
3. Dr. Guruh Fajar Shiddik, M.CS, Vice Rector from Universitas Dian Nuswantoro Semarang
4. Celia Shahnaz Ph.D, IEEE WIE Committee Chair-Elect and Professor, Department of EEE, BUET, Bangladesh

Therefore, I would like to thank all the organizers, supporters, and organizing committee members of iSemantic 2022 who have made this conference happen. I believe that without their support and hard work, iSemantic 2022 in COVID-19 pandemic would not have come true.

I believe that by participating in this webinar, together, let us accelerate the exchange of ideas, scaling-up of good practices and make collaboration together.

We do hope that in this webinar iSemantic is also going to be a great success like the one last year, and we request for your support to make this event a memorable and successful one.

Thank you for your participation and enjoy the series of webinar iSemantic event.

Wassalamualaikum wr. wb

Welcome Speech from IEEE Indonesia Section

Ir. Linawati, M.Eng.Sc., Ph.D.
Secretary, IEEE Indonesia Section

Dear Distinguished Guests, Colleagues, researchers, professionals, ladies, and gentlemen.

A prosperous and warm greeting.

First of all, let me thank to honorable rector of Universitas Dian Nuswantoro, Prof. Dr. Edi Noersasongko, M., and his representative; Chair of IEEE Power and Energy Society Prof. Afandi; Dr. Farih Al Zami as General Chair of this conference, thank you for inviting me to give the opening of this conference and the honorable; Dr. Saibah Ramirat, Dr. Guruh Fajar Shiddik, and Prof. Mohammad Faisal Bin and special for my close friend, Prof. Dr. Celia Shanasz, Ph.D. as speaker of this conference, as well as presenter and participants of the conference.

As well as a presenter and participants of this conference. On behalf of the chair of the IEEE Indonesia section, Bapak Dr. Wahyudi Hasbi, I'm pleased to welcome you to the iSemantic 2022.

We are glad that the situation is getting better because the pandemic now can be controlled. However, the conference is still held as a virtual conference because we're still facing unpredictable situations. This event activity tends to enrich knowledge, about the lattice issue, opinion, bright ideas of student, researcher and Academic. A new innovation in technology for future energy especially in the information and communication technology. That is the theme of this conference. iSemantic 2022 will encourage discussion and hope to inspire participants from a variety of things to start a collaboration within and across disciplines for the advancement of science. Session will also be important scientific progress and highlight the impact of Science and Technology. We hope you will have a productive and enjoyable time at this special conference. Honorable guests, keynote speaker, ladies and gentlemen, IEEE has over 400,000 members in more than 160 countries and more than 170,000 student members. It has the largest student members and a professional community, and let me explain about the IEEE Indonesia section briefly. As the section as one of the regular organization units of IEEE, IEEE Indonesia section was founded in 1988 and its development over the past 34 years. IEEE Indonesia section has contributed significantly in various activities that encourage the role of Science and Technology for Humanity in Indonesia, IEEE Indonesia together with volunteer members. All stakeholders have produced various activities by supporting more than 20,000 IEEE conference publications and more than 260 IEEE journals in Indonesia. IEEE Indonesia has also sponsored and supported more than 50 high quality conferences

each year, including this conference, the result of the quality conference publication are published in the IEEE Xplore index by scopus, WOS and other major databases, which has more than 5 million publications and more than 12 million download each month. As we all know, IEEE always maintains high quality publication as part of the intellectual culture. IEEE Indonesia also hold more than 40 professional technical, non-Technical and administrative activities each year, for all members. Currently, we have more than two thousand nine hundred (2900) members and more than 50 senior members, consisting of professional industry Academia and government, IEEE Indonesia, supported the development of 26 technical society chapters, joint chapters and for this conference who is a major player and supporter from technical IEEE Power and Energy Society (IEEE PES), And IEEE Indonesia section has 33 University student branches and 9 IEEE student branch chapters, which have become a forum for Technical and social activities that provide the best experience for Indonesian student and graduate student members. In addition, we have a non-technical affinity group, consisting of young, professional and women in engineering, and one IEEE sights on e-health and telemedicine interest group. And of course, I would like to encourage all of you to become an IEEE member to get all the benefits, including broader networking between Academia, professional, and government members. Last year, IEEE Indonesia also initiated cooperation with the Directorat Jenderal of higher education, in order to synchronize and support IEEE activities in the Indonesian Ministry of Education, and culture program, especially for the Kampus Merdeka, emancipated learning program. IEEE Indonesia is also exploring cooperation with the Indonesian industry in various activities. actively involved in providing input, the preparation of related government regulation and other activities.

Finally, congratulations to the conference committee for making this event Success. We do hope you will join us to make the international seminar on application for technology of information and communication conference, a memorable event.

Thank you, and have a great day.

Welcome Speech from IEEE Power & Energy Society

Prof. Ir. Arif Nur Afandi, Ph.D
Chair of PES Chapter

Good morning,

The honorable speaker, colleagues, professor, lectures, researcher, ladies and gentlemen.

On behalf of the Power and Energy Society chapter of IEEE Indonesia. I would like to express my great gratitude and welcome you to iSemantic 2022 as a flagship event of this year. This conference series is used to lead conferences in engineering and informatics technology with its relative aspects.

As in veteran series, fresh chapter always commits to support enhancement and other skill up including this conference for iSemantic 2022. I hope that iSemantic 2022 would be able to achieve providing and effective forum for academician which is just participate to advance knowledge research and technology for humanity. I also hope all participants stay on in the conference with attractive and excited about the future program reading knowledge research technology for humanity. More offer, I wish to collaborate more for the academician participants around the world with all of the expertise related in engineering and informative. So, in iSemantic 2022, I believe this event will drive to the exchange of the idea between all participants around the world. More offer, referring to the iSemantic 2022 the first chapter reference for greet invitation for all member, for all joining this program to come, enjoy, and develop activity as the first establishment of the first chapter on between 2015. The most member of first chapter come from the academicians and industrian also professional. I am sure that our synergy will make a better list and endeavor technology for sustainable development and finding knowledge.

Finally, my deep gratitude to the iSemantic team for bringing out this event in 2022. Also, Dian Nuswantoro led the organization for this memorable event.

Thank You.

Welcome Speech from Vice Rector

Dr. Pulung Nurtantio Andono, S.T., M.Kom
Vice Rector IV, Universitas Dian Nuswantoro

Bismillaahirrohmaanirrohiim:

Assalaamu'alaikum Wr. Wb.

Very good morning, Everybody:

First of all and the utmost of all, we would like to submit our high gratitude to Allah SWT, God the Almighty, for all the blessings and amenities within our life, so that we can meet safe and sound today for this prestigious international seminar at our beloved campus of Universitas Dian Nuswantoro, Indonesia. As General Chair, with great honor, we welcome you all and we thank you for your great participation in this 2022 iSemantic (***International Seminar on Application for Technology of Information and Communication***), with the topic: Technology 4.0 for Smart Ecosystem: A New Way of Doing Digital Business.

In the second occasion, we would like to mention with pride all the distinguished Key-note Speakers today:

1. Dr. Shay Bahramirad, Vice President Engineering and Smart Grid ComEd (Oakbrook Terrace, Illinois), US;

2. Prof. Mohd. Faizal Bin Abdollah, Associate Professor at Faculty of Information and Communication Technology University Teknikal Malaysia Melaka;

3. Dr. Guruh Fajar Shiddik, MCS, Vice Rector of Computer Science Universitas Dian Nuswantoro, Indonesia.

4. Mrs. Celia Shahnaz, Ph.D, IEEE WIE Committee Chair-Elect and Professor at Department of EEE, BUET, Bangladesh

We thank you very much for sharing your great experience concerning the update topic in the world today.

Dear all the Audience of Great Researchers,

We would also like to wish you all, your family, relatives, and colleagues: great health, happiness, and success during this Covid-19 Pandemic that has been long lasting until now. We pray together that this pandemic will end very soon.

Thank you for coming here today in our online Seminar about Technology 4.0 for Smart Ecosystem: A New Way of Doing Digital Business. We believe together that doing business today is different from that in the past. Doing business today using “TANGAN

KOSONG" [or virtually empty hand or DIGITAL BUSINESS] is very possible and even it is growing excellent and far more successful than the traditional business practices. This is our common challenges ahead as well as challenges for our children of tomorrow.

Dear Ladies and Gentlemen,

Through this Seminar, we encourage all of you to stay and participate actively to share ideas and thoughts so that this conference can become a platform of world discussions about the Technology 4.0 for Smart Ecosystem, especially making the best efforts and finding the new ways for doing Digital Business. We also encourage all the scholars, academicians, scientists, and practitioners to take a significant part in this international conference.

To bring our speech to an end, we would like to send our great appreciation to all the conference managers, all the reviewers, all the authors and co-authors for all the contribution to the success of this 2022 iSemantic conference. We also thank our publishing partner: IEEE Indonesia Section, IEEE Universitas Dian Nuswantoro Branch, and IEEE Power&Energy Society for the collaboration and participation, conference process, and the sponsorship.

We also thank all the 2022 iSemantic committee members for their great efforts and hard work so that this international seminar is running very well and becomes successful today and tomorrow.

A short poem:

"EAST OR WEST, HOME IS BEST"

PLEASE BE NICE, **iSemantic** IS THE BEST.

Thank you, thank you very much!

Wassalaamu'alaikum Wr. Wb.

COMMITTEE

isemantic

International Seminar on Application for Technology of Information and Communication

The 2022 International Seminar on Application for Technology of Information and Communication committes.

General Chair: Dr. Pulung Nurtantio Andono, M.Kom.

Steering Committee:

1. Prof. Dr. Ir. Edi Noersasongko, M.Kom. (Universitas Dian Nuswantoro - Indonesia)
2. Prof. Supriyadi Rustad (Universitas Dian Nuswantoro - Indonesia)
3. Prof. Zainal A Hasibuan (Universitas Dian Nuswantoro - Indonesia)
4. Prof. Dr. Taufik (Calpoly – USA)
5. Prof. Kunio Kondo (Tokyo University of Technology – Japan)
6. Prof. Kiyoaki Aikawa (Tokyo University of Technology - Japan)
7. Prof. Taichi Watanabe (Tokyo University of Technology Japan)
8. Prof. Masanori Kakimoto (Tokyo University of Technology - Japan)
9. Prof. Vincent Didik Wiet Aryanto (UDINUS - Indonesia)
10. Prof. Sumonta Kasemvillas (Khon Kaen Univ - Thailand)
11. Prof. Ahmad Yusoff (USM - Malaysia)
12. Prof. Mohamad Ashari (ITS - Indonesia)
13. Prof. Nana Suryana Herman (UTeM - Malaysia)
14. Prof. Mauridhi Hery Purnomo (Institut Teknologi Sepuluh November - Indonesia)
15. Prof. Benyamin Kusumoputro (Universitas Indonesia - Indonesia)
16. Prof. Alen Soldo (University of Split- Croatia)
17. Prof. Bambang Riyanto (Institut Teknologi Bandung - Indonesia)
18. Prof. Ida Ayu Giriantari (Universitas Udayana – Indonesia)
19. Prof. Andreas Lako (Unika Soegijopranoto – Indonesia)
20. Prof. Adang Suwandi (ITB - Indonesia)
21. Prof. Yanuarsyah Haroen (Institut Teknologi Bandung - Indonesia)
22. Prof. Sasongko Pramono Hadi (Universitas Gajah Mada - Indonesia)
23. Prof. Ahmad Binadja (Universitas Dian Nuswantoro - Indonesia)
24. Prof. Dr. Ir. Riri Fitri Sari. M.Sc. M.M. (Universitas Indonesia - Indonesia)
25. Prof. Dr. Ir. Harry Sudibyo, M.Sc. (Universitas Indonesia - Indonesia)
26. Prof. Kusmiyati ST., MT., Ph.D. (Universitas Dian Nuswantoro - Indonesia)
27. Dr. Guruh Fajar Shiddik, M.Cs. (Universitas Dian Nuswantoro - Indonesia)
28. Dr. Wahidin Wahab (Universitas Indonesia - Indonesia)
29. Dr. Ivan Jedvaj (Zagreb school of economics and management)

Technical Program Committee:

1. Dr. Eng. Farrikh Alzami, M.Kom. (Chair)
2. Dr. M. Arief Soeleman, S.Kom., M.Kom. (Universitas Dian Nuswantoro – Indonesia)
3. Dr. M. Ary Heryanto (Universitas Dian Nuswantoro - Indonesia)
4. Dr. Dian Retno Sawitri (Universitas Dian Nuswantoro - Indonesia)
5. Dr. Sendi Novianto, S.Kom., M.T. (Universitas Dian Nuswantoro - Indonesia)
6. Dr. Hector Sanches Lopez (Universitas Dian Nuswantoro– Indonesia)
7. Dr. Mochamad Facta (Universitas Diponegoro - Indonesia)
8. Dr. Supari (Universitas Semarang - Indonesia)
9. Dr. Mohamad Haddin (Universitas Islam Sultan Agung - Indonesia)

10. Dr. Dimas Anton Asfani (Institut Teknologi Sepuluh November - Indonesia)
11. Dr. Djoko Purwanto (Institut Teknologi Sepuluh November - Indonesia)
12. Dr. Sarjiya (Universitas Gajah Mada - Indonesia)
13. Dr. A.N. Afandi (Universitas Negeri Malang - Indonesia)
14. Dr. Danang Wijaya (Universitas Gajah Mada - Indonesia)
15. Dr. I Wayan Mustika (Universitas Gajah Mada – Indonesia),
16. Dr. Jumanto, M.Pd. (Universitas Dian Nuswantoro - Indonesia)
17. Dr. Tari Eszter (Universitas Dian Nuswantoro - Indonesia)
18. Dr. Wahyudi (UNniversitas Diponegoro - Indonesia)
19. Dr. Eng Suharyanto (Universitas Gajah Mada - Indonesia)
20. Dr. Paulus Insap Santoso (Universitas Gajah Mada - Indonesia)
21. Dr. Lukito Edi Nugroho (Universitas Gajah Mada - Indonesia)
22. Dr. Kusprasapta Mutijarsa (ITB - Indonesia)
23. Dr. Tole Sutikno (Universitas Ahmad Dahlan - Indonesia)
24. Dr. Arif Muntasa (Universitas Trunojoyo - Indonesia)
25. Dr. Ketut Edi Purnama (Institut Teknologi Sepuluh November – Indonesia)
26. Dr. Darlis Herumurti (Institut Teknologi Sepuluh November - Indonesia)
27. Dr. I.G.P Asto Budi Tjahyanto (Universitas Negeri Surabaya - Indonesia)
28. Dr. Lie Jasa (Universitas Udayana - indonesia)
29. Dr. Munawar Riyadi (Universitas Diponegoro - Indonesia)
30. Dr. Feri Yusivar (Universitas Indonesia - Indonesia)
31. Dr. I Gede Pasek Suta Wijaya (Universitas Mataram - Indonesia)
32. Dr. Saiful Bukhori (Universitas Jember - Indonesia)
33. Dr. Moh Khairudin (Universitas Negeri Yogyakarta - Indonesia)
34. Dr. Eng. Yuliman Purwanto (Universitas Dian Nuswantoro - Indonesia)
35. Dr. Ruri Suko Basuki (Universitas Dian Nuswantoro - Indonesia)
36. Dr. Muljono (Universitas Dian Nuswantoro - Indonesia)
37. Dr. MG Yuantari (Universitas Dian Nuswantoro - Indonesia)
38. Dr. Eng. Arief Udhiarto, S.T, M.T. (Universitas Indonesia - Indonesia)
39. Dr. Ir. Aries Subiantoro, MSEE. (Universitas Indonesia - Indonesia)
40. Dr. Aris Marjuni, S.Si, M.Kom. (Universitas Dian Nuswantoro - Indonesia)
41. Dr. Ricardus Anggi Pramunendar, M.Cs. (Universitas Dian Nuswantoro - Indonesia)
42. Dr. Catur Supriyanto, M.Cs. (Universitas Dian Nuswantoro - Indonesia)
43. Dr. Nova Rijati, S.Si, M.Kom. (Universitas Dian Nuswantoro - Indonesia)
44. Affandy, Ph.D. (Universitas Dian Nuswantoro - Indonesia)
45. Puwanto, Ph.D. (Universitas Dian Nuswantoro - Indonesia)

GENERAL INFORMATION

isemantic

International Seminar on Application for Technology of Information and Communication

Virtual Conference

Dear Author and Presenter, below are the detailed procedure to attend the virtual conference presentation and parallel room:

1. For the Seminar Ceremony and Keynote Speaker Presentation, we will use YouTube Live, Digital Terrestrial television from TVKU (name of broadcaster brand) and Zoom Webinar. The Detailed link for this Ceremony as follows:

Time	:	Saturday, September 17th 2022, 08.00 WIB (01.00 AM UTC)
Zoom link	:	https://us06web.zoom.us/j/81698168546?pwd=NXhPSEE2b0c1OFlzVXBmK0lsK0ZBQT09
Meeting ID	:	816 9816 8546
Pass	:	Udinus
Youtube	:	https://youtu.be/FaK7EFGZS8A

2. The author already submits the 13~14 minutes video presentation and slide presentation through EDAS System. If you have not submitted files, please do as soon as possible through alzami@dsn.dinus.ac.id
3. Author needs to attend the Dry Run Parallel Session (Rehearsal) And Parallel Session in Virtual Conference.
4. The schedule and rooms can be found in next page (for quick search, just search your paper number)
5. Dry run and Parallel Session will be held using ZOOM MEETINGS
6. Please to rename your zoom name into this format: room_number paper_number presenter_name. for example: A1 1570706948 Prabowo
7. AUTHOR must attend both DRY SESSION AND PARALLEL SESSIONS
8. At the dry Session and Parallel Session, we will ask your attendance, if you present, we will play the video presentation. After the video ends, you must answer the question or discussion that occur during the parallel session
9. In any case, we do not find your video presentation or slide presentation (either you did not submit those files at EDAS or submit through email), you must present orally
10. AUTHOR MUST ATTEND IN THE PARALLEL SESSION for Question and Answering Session. If the author leaves or does not attend the parallel session, we will consider the author did not attend the presentation (resulting in the paper not being submitted to IEEE).
11. Please attend 15 minutes before the scheduled time because we need to assign you to Zoom rooms.
12. Both the Dry Session and Parallel Session, WE WILL USE ENGLISH LANGUAGE.
13. Please change your zoom background using our VB which you can find in google drive attachment
14. Moderator will moderate the opening, question, feedback and closing
15. For Certificate, we will give you the google form to fill at the parallel session.

16. The dry run session will be held at Tuesday, September 13, 2022 - 15.00 WIB (08.00 AM UTC)
17. The 1st parallel session will be held at Saturday, September 17, 2022 - 13.00 WIB (06.00 AM UTC)
18. The 2nd parallel session will be held at Sunday, September 18, 2022 - 10.00 WIB (03.00 AM UTC)

We are looking forward to meet you at ceremony and parallel session.
Best Regards,

Dr. Eng. Farrikh Alzami, M.Kom.
Chair of Technical Program Committee
2022 International Seminar on Application for Technology of Information and Communication
E-mail : isemantic@lppm.dinus.ac.id
Website : isemantic.dinus.ac.id/2022

Broadcast Media

YouTube

URL : https://bit.ly/youtube-isemantic2022

This is official YouTube channel of TVKU ch49 Universitas Dian Nuswantoro

Sponsorship

CONFERENCE PROGRAM

Conference Program

Time (GMT+7)	Agenda
	Day 1: September 17th, 2022
07.30-08.30	Participant Enter Zoom Room
08.30-08.10	Plenary Session Opening
08.10-09.15	Opening Ceremony
	Speech by Rector UDINUS
	Speech by Chair of iSemantic
	Speech by Representative from IEEE Indonesia Section
	Speech by Representative from IEEE Power & Energy Society
Opening Webinar Session	
09.15-09.55	**Dr. Guruh Fajar Shiddik, M.Cs** Dean of Computer Science Universitas Dian Nuswantoro
10.00-10.40	**Dr. Shay Bahramirad** Vice President Engineering and Smart Grid ComEd (Oakbrook Terrace, IL)
10.45-11.25	**Prof. Mohd. Faizal Bin Abdollah** Associate Professor at Faculty of Information and Communication Technology University Teknikal Malaysia Melaka
11.25-12.05	**Celia Shahnaz** IEEE WIE Committee Chair-Elect
12.10	Closing Webinar Session
12.10-12.20	Photo Session
12.20	Plenary Session Closing
12.25-13.00	**Break Session**
13.00-15.00	Parallel Session Day 1
	Day 2: September 18th, 2022
10.00-12.00	Parallel Session Day 2

KEYNOTE SPEAKERS

isemantic

International Seminar on Application for Technology of Information and Communication

KEYNOTE SPEAKER 1

Dr. Shay Bahramirad

Vice President Engineering and Smart Grid ComEd
(Oakbrook Terrace, IL)

Shay Bahramirad is the Vice President of Climate and Resilience at Quanta Technology. She is responsible for assisting cities and utilities with climate change risk assessments for their assets, operations, and services and for developing mitigation strategies and investment strategies for adapting to climate change. Her work powers the planet by reducing carbon emissions, creating cleaner air for everyone, and making communities resilient. Dr. Bahramirad has held several positions in the Energy Sector, including Vice President of Engineering and Smart Grid at ComEd; the electric utility in IL. In these roles, she has overseen and/or executed “grid of the future” visions, technical roadmaps, analytical frameworks, and investment strategies. She has also been responsible for system reliability, DER integration, grid strategy and analytics, standards, emerging technologies, STEM programming, and reimagining the power grid to mitigate and adapt to climate change. She has also developed talent strategies, industry engagement plans, and advocacy programs to support business objectives. Dr. Bahramirad is an editorial board member of the Electricity Journal, an adjunct professor at the Illinois Institute of Technology, and the IEEE/PES Vice President of New Initiatives and Outreach, overseeing the organization’s engagement with policymakers globally and developing strategies for the next generation of frameworks including smart cities. She is the founder of PES WiP(Women in Power).

KEYNOTE SPEAKER 2

Prof. Mohd. Faizal Bin Abdollah

Associate Professor at Faculty of Information and Communication Technology University Teknikal Malaysia Melaka

Associate Professor Mohd. Faizal Bin Abdollah: received, master in Malaysia National University (UKM) and a Ph.D (Computer Network and Security) in University Technical Malaysia, Melaka Malaysia in the year 2004 and 2009 respectively. Currently, he is an Associate Professor in the Faculty of Information and Communication Technology University Teknikal Malaysia Melaka. He is also also serving as a reviewer of reputed top ranked SCI-indexed journals. He also authored a book of chapter and serve as consultant for network and forensics. Dr. Mohd. Faizal Bin Abdollah main research interest includes Computer Network and Security.

KEYNOTE SPEAKER 3

Dr. Guruh Fajar Shiddik, M.Cs

Dean of Computer Science Universitas Dian Nuswantoro

Associate Professor Dr. Guruh Fajar Shiddik received Master Degree in University Technical Malaysia, Melaka Malaysia and Ph.D (in Cloud Computing) in Universitas Gajah Mada, Yogyakarta, Indonesia. Currently he is the Dean of Computer Science Universitas Dian Nuswantoro. His research is mainly in Cloud Data Center, Computer Vision, and public health. His paper is published in top scopus journal, such as IEEE Access, Computer Methods and Programs in Biomedicine Elsevier, International Review on Modelling and Simulation, and so on

KEYNOTE SPEAKER 4

Celia Shahnaz

IEEE WIE Committee Chair-Elect

Celia Shahnaz, SMIEEE, Fellow IEB, received Ph.D. degree from Concordia University, Canada and is currently a Professor, Department of EEE, BUET, Bangladesh since 2015 (http://www.celiashahnaz.com). She has published more than 150 international journal/conference papers. She is a recipient of the Canadian Commonwealth Scholarship/Fellowship and Bangladesh Academy of Science Gold Medal for her contribution in Science and Technology. Recently, her papers have received best paper awards in Biomedical Engineering tracks at TENCON 2017 and at IEEE WIECON-ECE 2016, in Humanitarian Challenge track at R10 HTC 2017. She has around 20 years of experience (more than 18 years as an IEEE volunteer) of leading impactful Technical, Professional, Educational, Industrial, Women Empowerment and Humanitarian Technology and PES related Projects at national/international levels.

PARALLEL SESSIONS

isemantic

International Seminar on Application for Technology of Information and Communication

Parallel Sesssions 1

A1	Moderator: EKO HARI RACHMAWANTO, M.Kom		September 17, 2022 13.00 WIB (06.00 AM UTC)
No	**Paper ID**	**Title**	**1st Author**
1	1570798519	A Survey on Process Mining for Security	Swardiantara Silalahi
2	1570804341	The Effect of Image Dimension and Exposure Fusion Framework Enhancement in Pneumonia Detection Using Residual Neural Network	Agung Setiawan
3	1570811116	Accreditation Documents Profiling based on the Used of English terms using Text mining Algorithm: A case study on 24 accreditation document	Sari Wulandari
4	1570817169	Early Detection for Determinants of Risky Behavior in Cervical Cancer Cases through the C4.5 Algorithm in Indonesia	Adinda Dewi
5	1570817741	Integration of Fuzzy Multi-Attribute Decision Making and Clustering Methods for Student Apprenticeship Recommendations	Wiwiek Suristiyanti
6	1570821295	Student Graduation Prediction Model using Deep Learning Convolutional Neural Network (CNN)	Abu Salam
7	1570823936	A Conceptual Paper: Model of Integrated Surveillance System of Tuberculosis Based on the Internet of Things (IoT) for Accelerating Indonesia Free Tuberculosis in 2030	Sri Handayani
8	1570823925	Indonesian Traffic Signs Recognition Using Convolutional Neural Network	Afu Pradana
9	1570824687	Mask Detection Using Convolutional Neural Network	Abdussalam Abdussalam
10	1570819166	Application of Grayscale Co-occurrence Matrix (GLCM) Method for Classification of Quality Type of Guava Leaves as Traditional Medicine Using Neural Network Algorithm	Sholihul Ibad

A2	Moderator: Dr. SENDI NOVIANTO, S.Kom, M.T		September 17, 2022 13.00 WIB (06.00 AM UTC)
No	**Paper ID**	**Title**	**1st Author**
1	1570807956	Performance Analysis of Deep Learning Models for Sweet Potato Image Recognition	Arkansyah Putra Wibowo
2	1570812651	An Enhancement of DES, AES Based on Imperceptibility Along With LSB	Christy Atika Sari
3	1570817446	KNN Algorithm for Foodstuff Classification Using HSV Color Space and Feature Extraction	Anggun Pambudi
4	1570817682	Comparative Study on Image Filtering for Herbal Plant Identification Using Xception Based Convolutional Neural Network	Amiel Joseph Lozada
5	1570820078	Space-Efficient Probabilistic Data Structure Ribbon Filter: Analysis, Design, and Optimized Implementation	Byatriasa Linuwih
6	1570821173	Digital Certificate Authentication with Three-Level Cryptography (SHA-256, DSA, 3DES)	Bagas Yulianto
7	1570824095	End-to-End Circular Economy in Onion Farming with the Application of Artificial Intelligence and Internet of Things	Pulung Nurtantio Andono
8	1570823966	Integration of The Indonesian Cultural Heritage and Natural History Based on Digital Technology 4.0: A Conceptual Framework	Zainal Arifin Hasibuan
9	1570823960	The Supply Chain Management Model of Small Medium Enterprise (SME): Case Study Dry Food Souvenirs	Mila Sartika

A3	Moderator: FAUZI ADI RAFRASTARA, M.CS		September 17, 2022 13.00 WIB (06.00 AM UTC)
No	**Paper ID**	**Title**	**1st Author**
1	1570814935	Gaming Activities During the Covid-19 Pandemic Era: A Systematic Literature Review	Hendra Dinata
2	1570816829	Literature Review of OpenAI Five's Mechanisms in Dota 2's Bot Players	Edbert Fangasadha
3	1570817664	Residential Property Price Prediction Using Machine Learning: MakanSETU	Yash Panchal
4	1570817723	Spatio-Temporal Analysis Coastal Areas For Detection Mangrove Greenery Using Combined Mangrove Recognition Index	Fidiatus Sakinah
5	1570822420	Performance Analysis of Multiple Linear Regression and Random Forest for an Estimate of the Price of a House	S Ayu Septianingrum
6	1570823952	Component of Traffic Management System for Developing Countries: A Review	Farrikh Alzami
7	1570824069	Improving SMEs Skills in Indonesia to Support Export with E-Learning Culture Academy	Hendriansyah Hendriansyah
8	1570824210	Systematic Review of Educational Data Mining for Student Performance Prediction using Bibliometric Network Analysis (SeBriNA)	Eni Hermaliani

A4	Moderator: CINANTYA PARAMITA S.Kom, M.Eng		September 17, 2022 13.00 WIB (06.00 AM UTC)
No	**Paper ID**	**Title**	**1st Author**
1	1570807697	Evaluation of Real Options Valuation in Petroleum using Deep Learning Algorithms based on Stock Market Information with Dual Information	Heru Setyabudi
2	1570807958	CTR Prediction of Advertisements using Decision Trees based Algorithms	Mayur Jaisinghani
3	1570808076	Vision Transformer Approach for Vegetables Recognition	Li Li
4	1570814426	WhatsApp Profile Photo Investigation in Relation with Personality Traits Prediction	Mukhlish Fuadi
5	1570818851	Implement Android Application for Determination and Monitoring Blood Chemistry	Ima Kurniastuti
6	1570819474	GLCM Feature Extraction and PCA for Tuberculosis Detection with Neural Network	M. Nafis Farah
7	1570821178	AdaBoost Based C4.5 Accuracy Improvement on Credit Customer Classification	Munif Kholil
8	1570824440	Cholesterol Detection Through Iris Using Daugman and Gray Level Co-occurrence Matrix Based on K-Means Clustering	Neza Aemal Fadilla

A5	Moderator: MUHAMMAD SYAIFUR ROHMAN, M.CS		September 17, 2022 13.00 WIB (06.00 AM UTC)
No	**Paper ID**	**Title**	**1st Author**
1	1570815712	STARS: websocket design and implementation	Agustinus Wijaya
2	1570820106	Selection of Optimal Transportation Routes in the Distribution of Temanggung Original Robusta Coffee using Genetic Algorithms	Rindra Yusianto
3	1570820108	Smart potato grading using image processing and fuzzy grading system	Rindra Yusianto
4	1570821486	Defect Detection of Agricultural Commodities using Image Processing and Artificial Neural Networks	Rindra Yusianto
5	1570821796	Optimization of Horticultural Food Commodity Distribution Routes using Genetic Algorithm with Crossover Partially Match	Rindra Yusianto
6	1570823278	Food Horticultural Supply Chain Performance Efficiency using Hybrid Model: SCOR - System Dynamic Simulation	Rindra Yusianto
7	1570824528	Super Encryption Video Cryptography: Combination of Vigenere Cipher and Myszkowski Transposition	Raihan Yusuf
8	1570824561	Landsat Image Classification Based on K-Nearest Neighbor	Raynaldi Bismantaka Barito

Parallel Sesssions 2

A6	Moderator: Dr. FARRIKH AL ZAMI, M.Kom		September 18, 2022 10.00 WIB (03.00 AM UTC)
No	**Paper ID**	**Title**	**1st Author**
1	1570808203	Digital Transformation of the Classroom: Impact of Leveraging Artificial Intelligence (AI) and IoT in the Education Sector	Santosh Gopalkrishnan
2	1570805319	Text Encryption using Transform Dimension, Bit Plane Slicing, and Chaos System	Eko Rachmawanto
3	1570805350	Lexicon-Based Features on Naive Bayes Modification for Classification of Chinese Film	S Sunarti
4	1570806097	An Improved Handwritten Javanese Script Recognition using Adaptive Threshold and Multi-Feature Extraction	Eko Rachmawanto
5	1570806823	Triple DES Cryptography Based on Hash Function and DSA for Digital Certificate Authentication	Eko Rachmawanto
6	1570807934	Annotation Contribution to Classification Accuracy of Person Identification Based Gait Biometric	Septian Enggar Sukmana
7	1570817178	Efficient Deep Learning Model In Road Surface Condition Monitoring	Robet Robet
8	1570818104	Hybrid Method of Selection Features to Improve Performance of Covid-19 Classification	Sabir Rosidin
9	1570824594	Long Short-Term Memory Algorithm for Stock Price Prediction	Eko Rachmawanto

A7	Moderator: ERWIN YUDI HIDAYAT S.Kom, M.CS		September 18, 2022 10.00 WIB (03.00 AM UTC)
No	**Paper ID**	**Title**	**1st Author**
1	1570801581	Identification of Potato Supply Chain Network Design To Increase Farmer's Income	Ratih Setyaningrum
2	1570812041	Exploring Consumer Intention to Visit a Destination and eWOM through Uses and Gratification Perspective: Evidence from YouTube Travel Vlogs	Andri Dayarana K. Silalahi
3	1570816812	IT Service Desk Model Literature Review: Benefits and Challenges	Ardhi Firmansyah
4	1570817391	Time-based Performance Improvement for Early Detection of Conflict Potentials at the Central Java Regional Police Department	Ardiawan Harisa
5	1570817653	Exploring Indonesian Netizen's Emotional Behavior Through Investment Sentiment Analysis Using TextBlob-NLTK (Natural Language Toolkit)	Esther Talahaturuson
6	1570817663	Factors Influencing Government Employees To Adopt E-Government Innovation: Systematic Literature Review	Yauma Miftah Puja Nugraha
7	1570817752	Factors Affecting Intention to Use a New Human Resource Information System at One of the Small and Medium Enterprises in Indonesia	Damar Irawan
8	1570820305	The Adoption Model of People Analytics in Higher Education: A Soft System Approach	Sekar Prasetyaningtyas

A8	Moderator: GALUH WILUJENG SARASWATI, M.CS		September 18, 2022 10.00 WIB (03.00 AM UTC)
No	**Paper ID**	**Title**	**1st Author**
1	1570799310	The ECG-LPWAN based for Real-time monitoring Patient's Heart Beat Status	Puput Dani Prasetyo Adi
2	1570817667	Prediction of Nutritional Requirements for Children's Growth and Adolescents Using Machine Learning	Evelyn Ongkodjojo MD.
3	1570821322	Effects of Social Media Marketing in Cloud Kitchen Towards Online Platform in Indonesia	Lim Sanny
4	1570821352	User Experience Model using Concise User-Centered Design in Small and Medium Enterprise E-Commerce	Herman Maulana
5	1570821415	DESITA: E-Service Optimization of Student Final Project Management	Febrianur Putra
6	1570821477	Giziku Baik App: preventing stunting and nutritional status diagnose in a adolescent period	Vilda Ana Veria Setyawati
7	1570821363	Hybrid Neural Network and Evolutionary Model for Detection of Rice Plant Disease	Aditya Paramananda
8	1570824014	Comparative Study of Classification Algorithms for Website Phishing Detection on Multiple Datasets	Wendy Sarasjati
9	1570821186	Optimization of Infant Birth Predictions during the Covid-19 pandemic using the Particle Swarm Optimization-based K-NN Algorithm method	Ayu Hernita

A9	Moderator: ARIES JEHAN TAMAMY, M.Sc.Eng		September 18, 2022 10.00 WIB (03.00 AM UTC)
No	**Paper ID**	**Title**	**1st Author**
1	1570801911	Product and Process Design Through TOPSIS System Analysis Under Industry 4.0 Platform Application	Yen-Chun Wen
2	1570805089	Detection Performance Using Range Dependent SINR for Planar-PMIMO Radar	Syahfrizal Tahcfulloh
3	1570805342	Spoofing Detection of Fake Speech Using Deep Neural Network Algorithm	Kristiawan Nugroho
4	1570807807	Artifact-EOG Denoising Using FIR-Filtering In EEG Channel Selection For Monitoring and Rehabilitation of Stroke Patients	MY Teguh Sulistyono
5	1570808112	Design and Implementation of the Irrigation Robot Movement System on Grid Land using 2D Array Algorithm	Yohanssen Pratama
6	1570811042	Fatigue Level Prediction of Lower Extremity Knee Flexor and Extensor Muscles using Neural Network	Shuang Pan
7	1570816997	Adoption of RPA and AI to Enhance the Productivity of Employees and Overall Efficiency of Indian Private Banks: An Inquiry	Megha Jaiwani
8	1570817536	An Insight into Power System Resilience and its Confounding Traits	Kehkashan Fatima
9	1570817569	Development of a Virtual Reality System Based Cycling Training for Health Promotion of Individuals Post-Stroke	I Putu Lesmana

A10	Moderator: ZAENAL ARIFIN, S.T., M.Eng		September 18, 2022 10.00 WIB (03.00 AM UTC)
No	**Paper ID**	**Title**	**1st Author**
1	1570800910	A Study on the Impact of COVID-19 on Students and their Perception of e-Learning via MyCaptain App	Vimal Bhatt
2	1570801821	The Discrepancies of Online Translation-Machine Performances: A Mini-Test on Object Language and Metalanguage	Jumanto Jumanto
3	1570807900	Goals of Customer Relationship Management in Hospitals based on the Customer Life Cycle: A systematic literature review	Tita Rospricilia
4	1570816823	Systematic Literature Review on Solving Personalization Problem in Digital Marketing using Machine Learning and Its Impact	Aryo Bhaskaraputra
5	1570817571	The Transition of Independent Bookselling to Digital Space: A Case Study of Transit Bookstore's Instagram	Paramita Ayuningtyas
6	1570818568	Study Literature Review: Discovering the Effect of Chatbot Implementation in E-commerce Customer Service System Towards Customer Satisfaction	Nadya Tyandra
7	1570821325	Image Processing in 3D Printing Application: Study Case of Liver Organ	Menik Kurniatie
8	1570821389	Prediction of hourly solar radiation in Indonesia using LSTM	Dian Sari
9	1570824673	Comparison of Acoustic Characteristic among Electronic, Human-Played and Robot-Played Demung	Sendi Novianto
10	1570824372	Comparison Of Clustering Methods For Health Clinic Products	Oki Sudarmojo

PAPER ABSTRACT

PAPER ID: 1570798519

A Survey on Process Mining for Security

Swardiantara Silalahi (Institut Teknologi Sepuluh Nopember, Indonesia); Umi Laili Yuhana (Institut Teknologi Sepuluh Nopember, Indonesia); Tohari Ahmad (Institut Teknologi Sepuluh Nopember (ITS), Indonesia); Hudan Studiawan (Institut Teknologi Sepuluh Nopember, Indonesia).

Abstract – Security is one of the main issues in the era of technology that every organization should take into account. Among the existing approach, process mining takes an important role in security investigations. The ability to discover the process and check the conformance of the running process are key features of process mining which helpful to perform security investigation. The deviation between the process model compared to event log data is considered a security issue. Thus, it is important to keep the log data stored safely and well-documented. However, many information systems are not process-aware due to the variability of the event data sources. Therefore, this paper briefly identifies and summarizes previously published studies and recent works in terms of the state-of-the-art process mining techniques used in the security domain. This survey identifies the existing effort on methods, datasets, tools and frameworks. Finally, we summarize possible future works in utilizing process mining for security-related problems.

Topic: Computer Science and Information Technology

PAPER ID: 1570799310

The ECG-LPWAN based for Real-time monitoring Patient's Heart Beat Status

Puput Dani Prasetyo Adi (National Research and Innovation Agency (BRIN-RI), Indonesia & UNMER-Malang, Indonesia)

Abstract – In this study, the ECG Sensor was monitored using IoT based on LoRa 915 MHz to monitor a Patient's Heart Beat Status. Electrocardiogram or ECG is essential to determine normal or abnormal heart conditions. Can determine the heart rate (bpm) tachycardia or bradycardia. In this research, the ECG output is displayed on the Graphical User Interface (GUI) or Application Server Thingspeak explicitly used for Internet of Things (IoT) Applications. Moreover, the Dragino LoRa 915 MHz LoRa and the Dragino LoRa 915 MHz Gateway transmit ECG data to the internet. Therefore, the doctors and patients can quickly receive ECG data in real-time everywhere in Long-range conditions. LoRa Receive Signal Strength (RSS) will be tested at a certain distance in decibel meters (dBm) and in non-Line-of-Sight (Non-LoS) conditions in densely populated areas, analysis of possible Packet Loss, Bandwidth, Spreading Factor (SF), Chirps Spread Spectrum (CSS), Packet Delivery Ratio (PDR), Receive Signal Strength Indicator (RSSI), and analysis of data throughput from LoRa communication with a server, and Bit Rate Error (%) analysis generated by LoRa 915 MHz on IoT design structures.

Topic: e-Health Technology

PAPER ID: 1570800910

A Study on the Impact of COVID-19 on Students and their Perception of e-Learning via MyCaptain App

Vimal Kamleshkumar Bhatt (Symbiosis Institute of Business Management, Pune & Symbiosis International Deemed University, Pune, India); Binod Sinha (Balaji Institute of Modern Management, Sri Balaji University, Pune, India); Ravi Kumar V v (Symbiosis Institute of Business Management, Pune, India & Symbiosis International, Deemed University, Pune, India)

Abstract – The educational system across the country has been adversely affected due to the COVID-19 pandemic. This forced several educational institutions to be closed, affecting students across the country. Because of the pandemic, people have been advised to maintain a safe distance of at least 6 feet, which clearly doesn't support the whole premise of educational institutions. This has brought in a huge change in the interactions that take place between teachers and students. This has brought a huge difference in students' lives as traditional classroom teaching has had to take a back seat while computer-based learning is prevalent now. This type of learning, termed online learning, is how educational goals have been achieved ever since the pandemic broke out. It is imperative to understand how students' lives have changed due to unforeseen circumstances and how their perception has changed toward the e-learning platform. In this research paper, an attempt has been made to focus on and understand the impact of COVID-19 on students and their perception of e-learning especially using MyCaptain as a platform.

Topic: Technology for Language and Literature Study

PAPER ID: 1570801581

Identification of Potato Supply Chain Network Design To Increase Farmer's Income

Ratih Setyaningrum (Universitas Dian Nuswantoro, Indonesia); Silvia Irawati (Dian Nuswantoro University, Indonesia);

Abstract – The problem in this research is the supply chain network, which according to the researcher is too long, causing less efficient supply chain network. This research was aimed to know 1) How was the picture of the current potato supply chain in Wonosobo, 2) How was the value chain for the potato commodity, 3) the benefits obtained at each link in the value added that have been given to the potato commodity and 4) the design of a potato supply chain that could provide value added so that it can be profitable for farmers. This research was carried out in Wonosobo Sub-District, Central Java. This type of research was descriptive quantitative where the method used in selecting respondents was the snow ball sampling method. The data processing method used descriptive analysis method SCM, Value Chain method, Value Added method, and simulation of chain design using SCM software. The results showed that there were four main actors in the supply chain, namely farmers, collectors, local wholesale markets, and retail. And there were four marketing channels in the potato supply chain in Wonosobo, namely channel I farmer-collector-local wholesale market-retail, channel II farmer-collector-local wholesale market-wholesale market outside the province, channel III farmer-collector-wholesale market outside the province, channel IV farmer-local wholesale market-retail. The results of value chain analysis were divided into two, namely quantitative analysis and qualitative analysis using Porter's theory. Quantitative analysis showed that the highest income was obtained by farmers, but it needed to be underlined that they took the longest time to obtain this income due to the harvest process. Whereas the second largest income was obtained by collectors who got within three days. Porter's theory analysis shows that all supply chain actors have carried out the main activities and organized support activities. Value Added analysis using the Hayami method shows that collectors get the biggest profit from selling potatoes to local parent that is equal to 89%. The new supply chain design was implemented using powersim by cutting one of the supply chain actors, namely collectors and replacing it with agricultural cooperatives, where with this simulation it can be seen that farmers' income has increased from Rp. 14,980,333 to Rp. 19,408,618.92.

Topic: E-commputing Technologies

PAPER ID: 1570801821

The Discrepancies of Online Translation-Machine Performances: A Mini-Test on Object Language and Metalanguage

Jumanto Jumanto (Universitas Dian Nuswantoro, Indonesia); Rahmanti Asmarani (Universitas Dian Nuswantoro, Indonesia); Sarif Rizal (Universitas Dian Nuswantoro, Indonesia); Haryati Sulistyorini (Universitas Dian Nuswantoro, Indonesia)

Abstract – This research has explored the discrepancies of online English-Indonesian translation-machine performances. Object language is the verbal language with literal meaning, while metalanguage is the language with figurative meaning. The words sitting duck as a duck which is sitting (bebek duduk) is an object language, while sitting duck as an easy target (sasaran empuk) is a metalanguage. This research has employed six methods: online observation, online-machine translation, auto-expert judgement, verification, classification, and interpretation. The discrepancies are obtained from verification on four set-up aspects of 10 corpus-data, i.e. object language alone, object language within context, metalanguage alone, and metalanguage within context. Upon the analyses on translation performances by Google Translate, Bing Microsoft Translator, Yandex Translate, and Systran Translate, the high-percentage discrepancies mostly happen in the translations of metalanguage, while the translations of object language are successful enough with low-percentage discrepancies. Based on the findings, online translation should be developed within the aspects of metalanguage in the target language. The findings propose the inclusion of object language and metalanguage in the online translation machines, and they challenge more metalanguage words to exercise the appropriacy of online translation machines. This study can also be a research model for other languages within online translation-machines.

Topic: Technology for Language and Literature Study

PAPER ID: 1570801911

Product and Process Design Through TOPSIS System Analysis Under Industry 4.0 Platform Application

Yen-Chun Wen (National Taiwan University & Garmin, Taiwan); Wun-Hwa Chen (National Taiwan University, Taiwan)

Abstract – This research proposed three hypotheses to emphasize the key factors of corporation development by introducing the TOPSIS system analysis methodology. Due to the ambiguity of decision supporting criteria that would lead to improper decision issues, the proposed framework will help decision-makers evaluate priorities. Equipped with the data analysis system, corporations can expand their automation configuration. The verification of the weighting system construction can not only help the manager define strategy but also assist operation management. This study discriminates various criteria and variables utilized for the R&D process expected increased by around 30% of design efficiency. After introducing the modular design to different corporations, decision-makers can break the operating dilemma.

Topic: Electrical and Electronic Technology

PAPER ID: 1570804341

The Effect of Image Dimension and Exposure Fusion Framework Enhancement in Pneumonia Detection Using Residual Neural Network

Agung W. Setiawan (Institut Teknologi Bandung, Indonesia)

Abstract – This study tries to find the performance of ResNet 50, 101 and 152 version 1 architecture to classify normal and pneumonia using chest X-ray. For the second goal, the effect of image dimension is investigated. Furthermore, the different distribution of training, validation and testing images in the dataset is explored, i.e. dataset A and B. 5,838 chest X-ray images are used in dataset A. For dataset B, 5,856 images are used. These images are distributed randomly as training, validation and testing images with compositions of 80%, 10% and 10%. For each dataset, 12 image dimensions are used, i.e., 96 × 96; 128 × 128; 160 × 160; 192 × 192; 224 × 224; 256 × 256; 288 × 288; 320 × 320; 352 × 352; 384 × 384; 416 × 416 and 448 × 448 pixels. Moreover, this study used exposure fusion framework as image enhancement in the preprocessing stage. In general, ResNet 152 architecture has better performance than ResNet 50 and 152. However, the best performance is achieved by dataset A using ResNet 50 and an image dimension of 384 × 384 pixels. This model has an accuracy, sensitivity, specificity, precision, F1-score and ROC of 97.6%, 99.3%, 93.1%, 97.5%, 98.4% and 96.2%. The pneumonia detection using ResNet is affected by the distribution of training, validation and testing images. Furthermore, the detection performance will decrease as the number of images in the dataset is increasing. There is no correlation between the image dimension and the detection performance.

Topic: Computer Science and Information Technology

PAPER ID: 1570805089

Detection Performance Using Range Dependent SINR for Planar-PMIMO Radar

Syahfrizal Tahcfulloh (Universitas Borneo Tarakan, Indonesia)

Abstract – Multi-antenna radars with overlapping subarray transmit methods known as phased-MIMO (PMIMO) provide many advantages over conventional radars such as phased-array and MIMO radars, i.e. having high flexibility to adjust the beamwidth and beampattern of the entire array generated by each subarray as well as at the same time allows the generation of multiple beams through orthogonal waveforms. In addition, with the planar array configuration when compared to the linear array configuration, transmit-receive (Tx-Rx) gain, signal to interference plus noise ratio (SINR), parameter estimation, detection performance, etc. will drastically increase. So far, the detection performance of the radar has been studied in the form of detection probability and false alarm probability based on signal to noise ratio (SNR). In this paper, we have formulated, evaluated, and investigated the detection performance of planar-PMIMO radar based on the range dependent SINR which was then compared with the performance of traditional multi-antenna radars based on the effect of SINR and the number of subarrays in Tx. The evaluation results show that the planar-PMIMO radar is more flexible due to the variation of its subarrays compared to conventional radars that already exist to be able to detect targets in various target environmental conditions.

Topic: Electrical and Electronic Technology

PAPER ID: 1570805319

Text Encryption using Transform Dimension, Bit Plane Slicing, and Chaos System

De Rosal Ignatius Moses Setiadi (Dian Nuswantoro University, Indonesia); Eko Hari Rachmawanto (Dian Nuswantoro University, Indonesia); Rahmawati Zulfiningrum (Universitas Dian Nuswantoro, Indonesia); Md Kamruzzaman Sarker (Wright State University, USA)

Abstract – This study proposes the chaos 2D encryption method widely used in digital images. For this method to be used, two levels of dimensional transformation are carried out on text messages. The bit-plane slicing operation is performed to separate the entire bit-plane. There are seven bit-planes in plain text. Chaos encryption is performed on all bit-plane messages using different p, q values, and iterations to increase security. The values of p, q, and the number of iterations are derived from two keys that come from user input and plain text performed by the SHA-256 hash operation. The proposed method can improve encryption performance from statistical and differential control based on the testing results. The decryption process can also work perfectly, as evidenced by the value of BER and CER = 0.

Topic: Computer Science and Information Technology

PAPER ID: 1570805342

Spoofing Detection of Fake Speech Using Deep Neural Network Algorithm

Kristiawan Nugroho (Universitas Stikubank); Edy Winarno (Universitas Stikubank Semarang, Indonesia)

Abstract – Spoofing is a challenging research topic in Speaker Recognition. Spoofing, among others, can use fake speech, especially in the form of voice identity falsification or fraud, which is a problem that must be resolved. Various classification methods in Data Mining have been used in research to detect spoofing. However, The low level of accuracy, especially in managing large data, is an obstacle to using this approach. Deep Neural Network (DNN) is one of the methods in Deep Learning that is often used in research that processes extensive data. The DNN approach is proven to have good performance. This study uses the DNN method in detecting the authenticity of the speaker's voice. The results show that DNN is a method that has good performance in detecting fake speech spoofing with a model accuracy rate of 96.5%, 97.3% precision, 96.5% recall, and 96.7% F1 Measure.

Topic: Electrical and Electronic Technology

PAPER ID: 11570805350

Lexicon-Based Features on Naive Bayes Modification for Classification of Chinese Film

S Sunarti (Universitas Negeri Malang, Indonesia)

Abstract – There are many Chinese movies on the internet for learning Chinese, one of which is on YouTube. This educational film provides negative and positive comments. To get a good movie to learn Chinese, we need to classify positive and negative comments ratings for Chinese learning that teachers can use in this video. In addition, a review of comments is an evolution of Chinese film ratings. The evaluation of comments included includes storytelling, content, model, visual effects, and more. The review has criticisms and comments that include feelings about the movie on Chinese language learning. Commentator helps movie students compare a movie's mood with positive or negative emotion groups. This research uses the naive Bayes taxonomy with the Lexicon Based function in sentiment analysis of comments. The classification process considers the appearance of words of emotional content in the score and the possible score values for positive or negative emotional classes. Based on test results, feature selection accuracy, precision, and recall in the form of stop word exclusion receive scores of 0.91, 0.87, and 0.98, respectively.

Topic: Computer Science and Information Technology

PAPER ID: 1570806097

An Improved Handwritten Javanese Script Recognition using Adaptive Threshold and Multi-Feature Extraction

Ajib Susanto (Universitas Dian Nuswantoro, Indonesia); Ibnu Utomo Wahyu Mulyono (Dian Nuswantoro University, Indonesia); Christy Atika Sari (Dian Nuswantoro University, Indonesia); Eko Hari Rachmawanto (Dian Nuswantoro University, Indonesia); De Rosal Ignatius Moses Setiadi (Dian Nuswantoro University, Indonesia)

Abstract – Image quality greatly affects the object recognition process in the image. If the image quality is not good then the recognition process becomes more difficult. Preprocessing, feature extraction, and classifier are the most important parts of the object recognition process in the image. This process will determine the accuracy, precision, and recall of object recognition. The preprocessing section plays an important role to carry out a kind of quality improvement so that objects can be easily identified before feature extraction is carried out. This study proposes the use of an adaptive thresholding method to enhance recognition accuracy in machine learning-based Javanese scripts. The use of adaptive thresholding is carried out in the image binarization process. By using adaptive thresholding, complement, median filter, and dilation operations can be performed to produce a more natural form and pattern of Javanese script writing. Thus, more accurate feature extraction is obtained. Classification is done with the KNN classifier, with a value of K=3 an increase in accuracy of 5% is obtained compared to the previous method

Topic: Computer Science and Information Technology

PAPER ID: 1570806823

Triple DES Cryptography Based on Hash Function and DSA for Digital Certificate Authentication

Eko Hari Rachmawanto (Dian Nuswantoro University, Indonesia); Budi Handoko (Universitas Dian Nuswantoro, Indonesia); Chaerul Umam (Dian Nuswantoro University, Indonesia); Cahaya Jatmoko (Dian Nuswantoro University, Indonesia); Heru Pramono Hadi (Universitas Dian Nuswantoro, Indonesia); Rabei Raad Ali (National University of Science and Technology, Iraq)

Abstract – Digital certificates are digital files that are conventionally used as proof of participation or a sign of appreciation owned by someone. Cryptographic authentication method using digital signatures that are used as confidential evidence and validation of digital certificate ownership. Digital signatures use cryptographic algorithms such as one-way hashes, non-symmetric key cryptography, and symmetric key cryptography. So this study uses the proposed algorithm used, namely SHA-256, DSA & 3DES. The SHA-256 algorithm is used because of its high security, while the DSA algorithm is a special standard for digital signatures with 2 (two) functions, namely signing & verifying, and the last is the 3DES algorithm as double security which guarantees 3 (three) times the encryption process and description. By implementing a digital signature using the SHA256 hash method, the DSA signing & verifying method, and the 3DES cryptographic algorithm, digital certificates can avoid editing threats, and ensure authentication security and validation of the validity of the file, so that it can detect the original digital certificate. In 10 experiments, it is known that the digital signature method with the SHA-256, DSA and 3DES algorithms has an average run time speed of 0.0518186331 seconds for the signing method and 0.1321175146 seconds for the verify method.

Topic: Computer Science and Information Technology

PAPER ID: 1570807697

Evaluation of Real Options Valuation in Petroleum using Deep Learning Algorithms based on Stock Market Information with Dual Information

Heru Setyabudi (Bina Nusantara University, Indonesia); Iman Kartowisastro (BINUS University, Indonesia); Agung Trisetyarso (Bina Nusantara University, Indonesia); Edi Abdurachman (Bina Nusantara University, Indonesia)

Abstract – The valuation of petroleum reserves tends to be undervalued in an uncertain market. The most common method used in the valuation of natural resources is Discounted Cash Flow (DCF), also known as Net Present Value (NPV). However, this method does not consider several important aspects such as flexibility management and uncertainty value. The purpose of this study is thus conducting a valuation on petroleum reserves by using methods at which flexibility management and uncertainty value aspects are considered. The Real Option Valuation (ROV) method is calculated by analogizing it as a Financial Option. There are three types of data used in the valuation, namely: the oil price obtained from future contracts listed by New York Mercantile Exchange (NYMEX) and Intercontinental Exchange (ICE Futures Exchange), the long run risk-free interest rate and the amount of oil production and reserves. Artificial Intelligence Algorithm was then used to evaluate the characteristics of oil price movements based the information retrieved from NYMEX. It was found that the ROV method was suitable for the valuation of petroleum reserves. It could accommodate flexibility management and uncertainty value present in the petroleum reserve market. A deep learning machine was also shown to be an effective tool for predicting future contracts.

Topic: Computer Science and Information Technology

PAPER ID: 1570807807

Artifact-EOG Denoising Using FIR-Filtering In EEG Channel Selection For Monitoring and Rehabilitation of Stroke Patients

MY Teguh Sulistyono (Universitas Dian Nuswantoro, Indonesia); Dyah Ernawati (Universitas Dian Nuswantoro, Indonesia); Wellia Shinta Sari (Universitas Dian Nuswantoro, Indonesia); Siti Hadiati Nugraini (Universitas Dian Nuswantoro, Indonesia)

Abstract – Electroencephalography (EEG) will produce a non-invasive recording of brain signals used to analyze brain performance activity for medical or clinical personnel in diagnosing brain-related diseases such as stroke. The recorded EEG signal is the original brain wave signal which still contains noise artefacts. Artefact noise, among others, occurs due to eye movement or Artifact Electrooculography EOG. The main problem of this paper is that there is still noise in interpreting the EEG signal, so it is necessary to denoise the artefacts of the EOG signal using the FIR filter method. In a previous study to determine the performance of the EEG signal FIR filter in the human brain in reducing EOG artefacts through a movement stimulus, it can reach less than 100 Hz and work very well on Delta signals with the Signal to Noise Ratio (SNR) value obtained after filtering is equal to 3.2198 dB. Theoretically, the Delta signal is a wave that appears when a person is deep asleep and without dreams so that no outside information can enter the brain. Usually, in a deep sleeping position, the brain waves generated by recording will experience very little noise because there is no motor activity. Because this research focuses on stroke patients who have to carry out motor activities in medical rehabilitation, motor activity is needed to find the proper signal to reduce EOG-artefacts so that the cleaning process can be carried out correctly. Therefore, this study will improve the determination of the most appropriate signal for motor activity, namely working on Gamma signals and the performance of the EEG signal FIR filter in the human brain in reducing EOG artefacts through movement stimuli that can reach less than 100 Hz and determining the obtained SNR value. After filtering 3.2284 dB, the higher the SNR value is expected to be less noise cleaned and faster in segmentation, data decomposition, and feature extraction.

Topic: Electrical and Electronic Technology

PAPER ID: 1570807900

Goals of Customer Relationship Management in Hospitals based on the Customer Life Cycle: A systematic literature review

Tita Ayu Rospricilia (Sepuluh Nopember Institute of Technology (ITS), Indonesia); Mudjahidin Mudjahidin (Institut Teknologi Sepuluh Nopember, Indonesia)

Abstract – From a healthcare environment perspective, customer relationship management (CRM) is defined as an approach to managing patient relationships to build good relationships. To keep finances in balance, hospitals need to manage customer relationships. Much research on CRM has made significant progress in areas such as telecommunications, banking, and manufacturing, but research specific to the hospital environment is very limited. This systematic review aims to categorize, summarize, synthesize, and assess research on CRM in hospitals. This study uses a systematic literature review technique that starts by compiling research questions, the search process, study selection, conducting a review, analysis, synthesis, and reporting. The result of this research is a synthesis of 30 articles that were analyzed based on research goals and research approach. As much as 27% of CRM in the study was used for customer acquisition, 40% for customer retention, and 33% for customer conversion.

Topic: e-Health Technology

PAPER ID: 1570807934

Annotation Contribution to Classification Accuracy of Person Identification Based Gait Biometric

Septian Enggar Sukmana (Politeknik Negeri Malang, Indonesia); Deasy Sandhya Ikawati (State Polytechnic of Malang, Indonesia); Habibie Dien (Politeknik Negeri Malang, Indonesia); Ashafidz Dianta (Politeknik Elektronika Negeri Surabaya, Indonesia)

Abstract – Annotation takes part in person identification-based gait. Many studies use annotation in gait analysis for person identification using silhouette technique. However, implementation of annotation in 3D gait data such motion capture is still rare, but it is compromising as a study for person recovery which utilizes only certain human body parts. To begin this study, a person identification using classification technique is used as a study case. Annotation which consists of binary decision making (BD) and rectangular rounded (RR) are performed to limit body part area that is selected to be processed by Naïve Bayesian classification. No annotation is also utilized as comparison those two annotation techniques. By using 6, 10, and 16 markers usage scenarios, the result shows that BD always outperforms to no annotation, while RR has lower accuracy to no annotation at using 10 markers. The accuracy gap analysis shows that comparison between BD and RR shows no consistency rate on each amount of marker usage.

Topic: Computer Science and Information Technology

PAPER ID: 1570807956

Performance Analysis of Deep Learning Models for Sweet Potato Image Recognition

Arkansyah Putra Wibowo (Dian Nuswantoro University, Indonesia); De Rosal Ignatius Moses Setiadi (Dian Nuswantoro University, Indonesia)

Abstract – Current technological developments make human work increasingly automated. Deep learning has been widely used in computer vision to help humans recognize objects. TensorFlow is a form of CNN model that is widely used to implement computer vision. In this research, the performance of four TensorFlow models was tested to recognize yellow sweet potatoes and Cilembu, which have many similarities and are not easily distinguished by ordinary people. These two types of sweet potatoes need to be determined because they have a significant difference in economic value. The four TensorFlow models tested were MobileNetV1 FPN SSD, MobileNetV2 SSD, MobileNetV2 FPNLITE SSD, and EfficientDet-D0. Based on the test results, the MobileNetV1 FPN SSD model has the best precision in all classes and has good accuracy in the yellow sweet potato class. But the performance is too lame on Cilembu sweet potato and requires the longest training time. Meanwhile, the most stable performance based on precision, accuracy and recall is the EfficientDet-D0 model. The training process is also faster than the MobileNetV1 FPN SSD.

Topic: Computer Science and Information Technology

PAPER ID: 1570807958

CTR Prediction of Advertisements using Decision Trees based Algorithms

Mayur Rattan Jaisinghani (VESIT, India); Chirag Lundwani (VESIT, India); Orijeet Mukherjee (VESIT, India); Neeharika Nagori (VESIT, India); Prerna Solanke (VESIT, India)

Abstract – In this age of digitization, all the businesses have started focusing their attention on getting customers online. In the present scenario to attract huge customer bases, businesses require proper marketing which is incomplete without advertising. To maximize their reach, online advertising came into picture and to optimize their marketing potential, knowing and understanding the CTR of an advertisement is very important. This paper delves into the sector of machine learning, to predict the CTR of an advertisement. It provides a comparative study of four algorithms - decision trees, XGBoost, random forest and LightGBM - based on their performance to determine which algorithm gives the highest AUC score, F1 score, accuracy and precision.

Topic: Computer Science and Information Technology

PAPER ID: 1570808076

Vision Transformer Approach for Vegetables Recognition

Li Hua Li (Chaoyang University of Technology, Taiwan); Radius Tanone (Chaoyang University of Technology, Taiwan & Universitas Kristen Satya Wacana, Taiwan)

Abstract – The use of Vision Transformer to solve computer vision issues, particularly Image Classification, is a recent trend. Smart agriculture is one of the objectives of Industry 4.0 in Indonesia, which is currently vigorously advancing the agricultural sector. Vegetable classification is one example of a difficulty that can be encountered in the approach of smart agriculture. As a result of this possible issue, one solution is to use Vision Transformer to construct deep learning models. In this study, we use the Vision Transformer to tackle the problem of vegetable classification with an input size of 32x32 and a total patch size of 64. The model is constructed and trained with, and it has a 98% accuracy. Furthermore, the model employs several measures to evaluate the performance of the developed model. These findings indicate a promising performance for image classification problems, particularly with vegetables recognition.

Topic: Computer Science and Information Technology

PAPER ID: 1570808112

Design and Implementation of the Irrigation Robot Movement System on Grid Land using 2D Array Algorithm

Yohanssen Pratama (Del Institute of Technology, Indonesia)

Abstract – Currently, the use of robots in agriculture is one of the studies carried out by many researchers. The ability of a robot that can consistently work will make it easier to monitor and water agricultural crops, in addition to the nutrient requirements of plants. There are several parameters that must be considered consistently every day so that plants can grow optimally, namely soil moisture, the amount of water needed by plants, and spacing, so as to produce a maximum broccoli harvest with good quality. This study, study was conducted on the design and implementation of an irrigation robot movement system to monitor the growth of broccoli plants. This irrigation robot has the ability to do watering, and plant monitoring and can move directly to the work point automatically. This irrigation robot is designed using a 2D array algorithm so that the irrigation robot is able to move to a predetermined coordinate point, to enable the robot to move according to the coordinates, the land planted with broccoli will be divided into grids. Testing the functionality of the robot is done by giving a step to the stepper motor and dividing the land with a box width of 7.5 cm on the land prototype. Based on the implementation results obtained 97% accuracy for movement on the x-axis, 99% for movement on the y-axis, and 100% for the z-axis. The robot has worked well and fulfilled the expected functionality to carry out the task of moving the robot to coordinates for monitoring and watering plants.

Topic: Electrical and Electronic Technology

PAPER ID: 1570808203

Digital Transformation of the Classroom: Impact of Leveraging Artificial Intelligence (AI) and IoT in the Education Sector

Santosh Gopalkrishnan (Symbiosis Institute of Business Management, Pune & Symbiosis International (Deemed) University, India); Madhura Bedarkar (Associate Professor, SIBM Pune, Pune, Maharashtra, India)

Abstract – The speed at which transformation and changes occur across all sectors is unanticipated yet overwhelming. Many sectors, including the Education sector, have been turned upside down from what they had been a decade earlier. Digitalisation has a profound impact on our work, education, and social life and has brought tremendous changes in how we educate and get educated. There has been a remarkable change in the way the Education sector has been impacted - right from the geographical location of schools to the methods used in education delivery. This paper aims to study the impact of implementing digital transformation in the secondary and tertiary education sector by leveraging various Artificial Intelligence (AI) and available IoT tools. A focus group discussion was also conducted amongst academicians from the management domain to understand their perspectives on the growth of the education sector. The key findings of this paper are that bringing digital transformation into the classroom is incredibly beneficial as it improves affordability and access to education for the learners while ushering in the feasibility and sustainability of education delivery for the providers. The study proposes suggestions to improve the education delivery process using digital initiatives.

Topic: Computer Science and Information Technology

PAPER ID: 1570811042

Fatigue Level Prediction of Lower Extremity Knee Flexor and Extensor Muscles using Neural Network

Shuang Pan (South China University of Technology, China); XiChen Xu (South China University of Technology, China); Yan Chen (South China University of Technology, China); Longhan Xie (South China University of Technology, China); ZeWei Pan (South China University of Technology, China)

Abstract – The purpose of this paper is to build a model to predict the fatigue level of lower extremity knee flexor and extensor muscles based on sensor data. We used maximum voluntary contraction (MVC) to assess the fatigue level of muscles. We collected walking data from six healthy adults at four MVC levels. These data come from sixteen pressure sensors on the insoles and two inertial measurement units (IMUs) on the two feet. Fifty-one gait features were extracted from these data. Through using the ReliefF Algorithm, the fourteen features most relevant to the MVC level were extracted. The accuracy of neural network classifier is 72.7%. This indicates that the selection of features and the use of neural networks is reasonable. This study used fewer sensors and predicted more subdivided fatigue levels than previous studies. Findings from this study can help better understand how fatigue of knee flexor and extensor muscles affect gait characteristics, and further aid in developing an early warning system to prevent knee injuries.

Topic: Electrical and Electronic Technology

PAPER ID: 1570811116

Accreditation Documents Profiling based on the Used of English terms using Text mining Algorithm: A case study on 24 accreditation document

Syahrul Iman (Institut Teknologi Sepuluh Nopember, Indonesia); Adhi Dharma Wibawa (Institut Teknologi Sepuluh Nopember, Indonesia); Surya Sumpeno (Institute Teknologi Sepuluh Nopember, Indonesia); Arbintoro Mas (Institut Teknologi Sepuluh November Surabaya, Indonesia)

Abstract – Until recently, study program accreditation is still the standard for evaluating the feasibility and quality of the education process worldwide. Normally, in the process of accreditation, one specific study program needs to prepare a report document that represents the whole process of education, especially from the standpoint of quality, and then submit it to the National Board of Accreditation. Self-assessment and evaluation are the keys to creating a proper accreditation document. In the case of Indonesia, the accreditation process is run by the National Board of Higher Education Accreditation (called BANPT). The study program must prepare and submit a document that represents the overall process of education by following the national standard and format determined by BANPT. In this study, we hypothesized that the text mining technique can be used to evaluate the accreditation document by analyzing the English terms that are used in the document. The analysis is done by scoring the number of English terms in one accreditation document and selecting the proper terms that are used. We hypothesize that the higher the score is obtained by the document the higher the national rank of accreditation was obtained by the document.

In this study, 24 accreditation documents with approximately every document consisting of 200 pages within similar study programs were analyzed. A text processing technique was implemented to filter and clean the documents from unimportant words. English phrases were detected from each sentence in the document and then continued by extracting English terms further filtering to get the English terms is then performed. The selected English terms are then scored from each accreditation document. The validation process is done by mapping the scoring result with the Accreditation Rank obtained by the document. The result showed that the higher the score based on the English terms obtained by one document. The higher the Nasional Accreditation ranks too. However, two out of 24 documents did not show a similar pattern

Topic: Computer Science and Information Technology

PAPER ID: 1570812041

Exploring Consumer Intention to Visit a Destination and eWOM through Uses and Gratification Perspective: Evidence from YouTube Travel Vlogs

Andri Dayarana K. Silalahi (Chaoyang University of Technology, Taiwan); Lin Sheng Ling (Chaoyang University of Technology, Taiwan); Wen-Kuo Chen (Chaoyang University of Technology, Taiwan); Ixora Javanisa Eunike (University of HKBP Nommensen, Indonesia); Pantas H. Silaban (University of HKBP Nommensen, Indonesia); Widya Elisabeth Hutagalung (University of HKBP Nommensen, Indonesia)

Abstract – Consumers are motivated to utilize certain media in order to meet their needs. Drawing on the uses and gratification (U&G) perspective, this study aims to investigate how information seeking and entertainment factors influence consumer motivations to watch travel videos on YouTube. By investigating why consumers watch travel vlogs on YouTube, this study also investigates its emotional impact on customer engagement. Thus, it is assumed that when consumers are emotionally engaged, they will be more likely to visit destinations and share eWOM. This hypothesis was tested on 300 respondents who had experience traveling and distributing travel vlogs via social media. Using Smart-PLS 3.0 software, a structural equation modeling approach was used to test the research hypothesis. The results of hypothesis testing suggest that entertainment plays a significant role in forming emotional engagement, whereas information seeking plays a lesser role. From a U&G perspective, to travel vlogs on YouTube, it is evident that consumers who seek entertainment are the most emotionally engaged. Furthermore, the results also reveal that when consumers feel emotionally engaged with video travel vlogs on YouTube, they are strongly motivated to visit the destination and share eWOM through social media. As a result, it can be seen that emotional engagement is a crucial factor in the behavior of intent to visit and eWOM for destinations. A number of theoretical and practical implications are also discussed.

Topic: E-commputing Technologies

PAPER ID: 1570812651

An Enhancement of DES, AES Based on Imperceptibility Along With LSB

Christy Atika Sari (Dian Nuswantoro University, Indonesia); Wellia Shinta Sari (Universitas Dian Nuswantoro, Indonesia); Danang Wahyu Utomo (Universitas Dian Nuswantoro, Indonesia); Daurat Sinaga (Dian Nuswantoro University, Indonesia); Mohamed Doheir (Universiti Teknikal Malaysia Melaka, Malaysia)

Abstract – A data or information becomes important if only certain people can receive the information. For example, keeping a confidential documentation file. Files stored do not guarantee to be free from access and abuse by crackers such as wanting to modify or distribute the contents of the file on the basis of providing benefits for them. The security of information can be increased by using cryptography to encrypt messages into a secret cipher. The steganographic method is a method used to protect messages by inserting them into other media. In this study, a combination of cryptographic algorithms, namely Data Encryption Standard and Advanced Encryption Standard, was used for the Least Significant Bit steganography method. DES has the advantage of using S-Box. DES is not immune to brute force attacks and has a key length of only 56 bits, thus it is necessary to optimize the DES algorithm. AES has a more complicated key randomization process using a certain loop where AES is an extension of DES. On the other hand, to obtain a high imperceptibility value, LSB is used. The results of the combination of 2 cryptographic algorithms with steganography were tested with parameters such as PSNR and MSE which got values of 73.66 dB and 0.016, which means they are ideal values for stego images that have a high level of similarity with the original image. Encryption and decryption processing, the best time is 0.438 seconds with various message file sizes used. Meanwhile, in the embedding results, the image file size is slightly larger.

Topic: Computer Science and Information Technology

PAPER ID: 1570814426

WhatsApp Profile Photo Investigation in Relation with Personality Traits Prediction

Mukhlish Fuadi (Institute of Technology Sepuluh Nopember & Universitas Islam Negeri Maulana Malik Ibrahim Malang, Indonesia); Adhi Dharma Wibawa (Institut Teknologi Sepuluh Nopember, Indonesia)

Abstract – Personality is closely related to performance, but the implementation of personality tests is not easy to carry out, with a short time and minimal bias. As the most popular private messaging application, WhatsApp is not only used in social but also in professional communication. Its intimate nature makes the profile photo more personal than other social media. This study aims to predict a person's personality based on a WhatsApp profile photo by extracting content features. In this study, 132 respondents have filled out the Big Five Personality Test online and have allowed us to access their WhatsApp profile photos. The results of this study indicate, except for openness, that there is a significant relationship between personality traits and pictures used as profile photos. The content features of WhatsApp profile photos can also be used to predict personality traits. These findings prove that someone's personality affects the selection of their WhatsApp profile photos and vice versa.

Topic: Computer Science and Information Technology

PAPER ID: 1570814935

Gaming Activities During the Covid-19 Pandemic Era: A Systematic Literature Review

Hendra Dinata (Universitas Surabaya, Indonesia); Erma Suryani (Institut Teknologi Sepuluh Nopember, Indonesia); Jerry Dwi Trijoyo Purnomo (Institut Teknologi Sepuluh Nopember, Indonesia)

Abstract – The Covid-19 outbreak, which has been declared a pandemic since March 2020, has been causing problems worldwide. As a result, many countries have implemented lockdown policies to control the spread of the Covid-19 virus. In addition, time spent on gaming activity has increased by 52% since video game engagement was thought to be essential in improving players' vitality, reducing psychological suffering, and helping combat stress. This literature review was conducted as a systematic literature review based on the 15 primary studies between 2020 and March 2022. Analysis of the selected primary studies revealed that the authors conducted studies of gaming activities in the Covid-19 pandemic era for four reasons: to determine the factors of play intention, factors of purchase intention, factors of gaming disorder, and to investigate the impact of the gaming activities itself. Physical health issues, family interactions, social interactions, fear of missing out, psychological distress, and time and location flexibility are the six determinants for people to continue to play video games. Meanwhile, the expectation of performance and effort were the factors that influenced purchase intention in mobile games. And from these determinant factors, it seemed that psychological distress and fear of missing out were the causes of someone experiencing a gaming disorder. As for the method employed, Structural Equation Modeling (SEM) was the most extensively used statistical tool in conducting quantitative research. Six of the eleven quantitative research in the primary studies utilized SEM, and the others employed other statistical tools. Although, in the selected primary studies, we also have four studies conducted qualitative research using interviews and open-ended surveys. Ten different countries were identified as the origin country of the respondents for the primary studies, with Finland and the United States as the most research object. However, we also found three studies that did not specifically mention the origin countries of the respondents.

Topic: Computer Science and Information Technology

PAPER ID: 1570815712

STARS: websocket design and implementation

Penidas Fiodinggo Tanaem, PFT (Universitas Kristen Satya Wacana, Indonesia); Augie David Manuputty, ADM (Universitas Kristen Satya Wacana, Indonesia); Agustinus Fritz Wijaya, AFW (Universitas Kristen Satya Wacana, Indonesia)

Abstract – The need for real-time data has become the center of attention for technology users today. Thus, there are several methods that can be used, one of which is websocket. Websocket itself can be used to present real-time data using minimal resources. Thus, in this study, we will present a websocket concept that is implemented at STARS UKSW. The end result is a websocket model that is built using the Erlang programming language to produce a reliable, lightweight and scalable system.

Topic: Computer Science and Information Technology

PAPER ID: 1570816812

IT Service Desk Model Literature Review: Benefits and Challenges

Ardhi Dwi Firmansyah (Sepuluh Nopember of Institute Technology, Indonesia); Apol Pribadi Subriadi (Institut Teknologi Sepuluh Nopember, Indonesia)

Abstract – IT service desk is an important element in IT service management, especially as a single point of contact (SPOC) for IT service users. The implementation of the service desk is expected to improve service performance and ensure IT services run well. However, many governments are still having difficulties in this sector in various areas, particularly during implementation. The management of incident reports and service requests in the government is only submitted directly to each individual, giving rise to multiple points of contact. Meanwhile, a standard or framework cannot be directly adopted, but requires adjustments to the characteristics of the organization. The application of standards or frameworks in real case studies cannot be directly applied to different organizations that have different characteristics too. Thus, this study aims to create a reference study that explains the main topics of IT Service Desk. Using the SLR, a thorough literature review was carried out. A total of 30 articles were selected from several leading papers.

Topic: E-commputing Technologies

PAPER ID: 1570816823

Systematic Literature Review on Solving Personalization Problem in Digital Marketing using Machine Learning and Its Impact

Aryo Bhaskaraputra (Binus University, Indonesia); Anderies Anderies (BINUS University, Indonesia); Alexander Agung Santoso Gunawan (Bina Nusantara University & University of Indonesia, Indonesia); Adji Ramadhan (Binus University, Indonesia); Febriana Sutojo (Binus University, Indonesia)

Abstract – Nowadays, the online shopping cycle has experienced a rapid increase. Customers are spending more time on social media, which leads to them leaving digital footprints on the internet and generating massive amounts of data. With the help of machine learning, the process of gathering and analyzing data becomes faster and easier. However, a recent survey shows that most marketing firms lack an effective personalization strategy for reaching their target market. Therefore, the purpose of this study is to find out how machine learning can be used to solve the personalization problem in digital marketing and its impact on future businesses. The authors would like to conduct a Systematic Literature Review (SLR) on machine learning and big data in digital marketing based on previous studies related to this topic. Several previous studies have tried to provide effective ways to improve personalization strategies in digital marketing. These studies show that machine learning can speed up the marketing process with the right target. This is because machine learning can automate, optimize, then collect data, analyze it, and store data from each user. This allows a promotion system that is right on target according to the users' needs. In general, the authors conclude that by using big data, machine learning can help marketing companies to create more effective personalized marketing strategies so that they can be directed to the right consumers. The authors also believe that this topic of personalization should be further researched for future businesses.

Topic: Computer Science and Information Technology

PAPER ID: 1570816829

Literature Review of OpenAI Five's Mechanisms in Dota 2's Bot Players

Edbert Felix Fangasadha (BINUS University, Indonesia); Steffi Soeroredjo (BINUS University, Indonesia); Anderies Anderies (BINUS University, Indonesia); Alexander Agung Santoso Gunawan (Bina Nusantara University & University of Indonesia, Indonesia)

Abstract – Multiplayer Online Battle Arena (MOBA) games, such as Dota 2, present significant problems to AI systems, such as multi-agent, massive state-action space, and sophisticated action control. Those problems will become increasingly important in the development of more powerful AI systems. OpenAI Five has demonstrated that DRL (Deep Reinforcement Learning) agents can be trained to achieve superhuman competence in matches that involve thousands of steps before reaching the end goal without the need for explicit hierarchical macro-actions. These DRL agents, in general, receive high-dimensional inputs at each step and act on deep-neural-network-based policies updated by the learning mechanism to maximize the return in an end-to-end manner. This paper investigates the approaches employed by OpenAI Five to gradually acquire knowledge during training: (1) using surgeries to solve the problem of game renewals, (2) using hyperparameters instead of ordinary parameters since they cannot be processed, (3) making decisions using policies in addition to macro strategies. Finally, how the agents in the game receive and respond to observations and actions is given, in addition to explanations of the dense reward function for multiple agent cooperation created using the zero-sum technique.

Topic: Computer Science and Information Technology

PAPER ID: 1570816997

Adoption of RPA and AI to Enhance the Productivity of Employees and Overall Efficiency of Indian Private Banks: An Inquiry

Megha Jaiwani (Symbiosis Institute of Business Management, Pune & Symbiosis International (Deemed) University, Pune, India); Santosh Gopalkrishnan (Symbiosis Institute of Business Management, Pune & Symbiosis International (Deemed) University, India)

Abstract – In order to remain competitive in an ever-dynamic environment, especially in terms of technological advancements, customer satisfaction, maximising security, and reducing operational costs, banks have become early adopters of Robotic Process Automation (RPA) and Artificial Intelligence (AI). Against this backdrop, some very normative questions become inevitable. Does this technological diffusion lead banks towards productivity? Does the adoption of RPA and AI impact the productivity of employees and the overall efficiency of banks? Are these technological investments worth making? These are some of the questions we endeavour to answer through our study. We choose India's two largest private sector banks (HDFC and Axis) for the study. The productivity ratios like business per employee, profit per employee and employee cost to operating cost ratio are considered indicators of employees' productivity. The cost to income ratio is used as the banks' efficiency indicator. Furthermore, the number of onsite and offsite ATMs and POS terminals installed by the banks are used to substantiate the diffusion of RPA and AI. The data is taken for the period 2011- 2021 from the annual reports of the banks available on the CMIE prowess website and Reports on trends and progress of banking in India from the Reserve Bank of India's official website. The relationship among those variables is made using the Time Series multiple regression models. The study showed a significant positive impact of POS on the business per employee and a significant negative impact on the cost to income ratio for both banks considered for the study. The findings reconfirmed the positive role of technological and artificial intelligence diffusion in the banking sector. The study recommends that by leveraging the information provided by RPA and AI, banks can build a 360-degree view of each customer, including purchases, critical life events, circle of influence, complaints filed, satisfaction level, etc. Thus, banks can create customer-centric strategies that make customer experience frictionless by further harnessing these technologies.

Topic: Electrical and Electronic Technology

PAPER ID: 1570817169

Early Detection for Determinants of Risky Behavior in Cervical Cancer Cases through the C4.5 Algorithm in Indonesia

Adinda Cipta Dewi (Universitas Dian Nuswantoro, Indonesia); Guruh Fajar Shidik (Universitas Dian Nuswantoro, Indonesia)

Abstract – In 2020, the discovery of cervical cancer is the second most common cancer in Indonesia after breast cancer, which is 9.2%. Community efforts to carry out prevention and early diagnosis are still low, due to lack of knowledge, awareness, and ignorance of screening. The purpose of this study is to apply the C4.5 algorithm for early detection of determinants of cervical cancer risk behavior. This study uses a quantitative approach with experimental methods on the RapidMiner application to find knowledge. The study analyzes 10 attributes that contain information about demographic and behavior. The samples studied were divided into 2, namely primary data as testing data from 23 respondents and secondary data as training data from 668 respondents. The pattern generated from the C4.5 Algorithm technique can be used to predict patient categories, are positive cervical cancer and negative cervical cancer through demographic and behavioral factors. This result indicate that demographic factor, age is the most influential determinant of a person's risk of cervical cancer. Age is one of the determinants of a person's behavior. Measurements using RapidMiner software prove that the C4.5 algorithm has an accuracy of 91.30%. While the AUC curve has a value of 0.866 which according to Gorunescu is included in the Good Classification. Researcher suggest an increase in cervical cancer prevention programs in health services such as health promotion activities, screening, and consultation on contraceptive use. This activity is very influential in reducing the incidence of cervical cancer.

Topic: Computer Science and Information Technology

PAPER ID: 1570817178

Efficient Deep Learning Model In Road Surface Condition Monitoring

Robet Robet (STMIK TIME, Indonesia); Moch Arief Soeleman (Sepuluh Nopember Institute of Technology & Dian Nuswantoro University, Indonesia)

Abstract – Road is a crucial asset for public services, therefore, they must be repaired as soon as possible to bring safety for the driver on the road. In recent years research in monitoring and identification of road surface conditions using images captured by the low-cost camera or smartphone cameras and deep learning can identify road surface conditions efficiently and quickly. The study aims to explore the performance of the deep learning model. We proposed a U-Net architecture for road extraction from Road Traversing Knowledge (RTK) dataset. The result has been compared with different automatic segmentation models, and the result of segmentation using U-Net showed a more precise Accuracy of 97.08%, Mean-IoU 0.364, and faster computing time than the other models.

Topic: Computer Science and Information Technology

PAPER ID: 1570817391

Time-based Performance Improvement for Early Detection of Conflict Potentials at the Central Java Regional Police Department

Ardiawan Bagus Harisa (Universitas Dian Nuswantoro & Pandonga Creatives, Indonesia)

Abstract – Early detection of conflict potentials around the community is vital for the Central Java Regional Police Department, especially in the Analyst section of the Directorate of Security Intelligence. Performance in carrying out early detection will affect the peace and security of the community. The performance of potential conflict detection activities can be improved using an integrated early detection information system by shortening the time after observation, report preparation, information processing, and analysis. Developed using Unified Process as a software life cycle, the obtained result shows the time-based performance variables of the officers are significantly improved, including observation time, report production, data finding, and document formatting.

Topic: E-commputing Technologies

PAPER ID: 1570817446

KNN Algorithm for Foodstuff Classification Using HSV Color Space and Feature Extraction

Anggun Pambudi (Dian Nuswantoro University, Indonesia & UDINUS, Indonesia); Muhammad A Rofiq (UDINUS & CILAD, Indonesia); M. Anwar Sadat (Universitas Dian Nuswantoro (UDINUS), Indonesia & UDINUS SEMARANG, Indonesia); Moch Arief Soeleman (Sepuluh Nopember Institute of Technology & Dian Nuswantoro University, Indonesia); Ricardus Anggi Pramunendar (Universitas Dian Nuswantoro, Indonesia)

Abstract – Indonesian food is one of the richest culinary traditions in the world, characterized by its strong taste. This type of food requires additional ingredients in certain types of cuisine. However, most of the foodstuff photos distributed on social media only contain a few food ingredients that are irregular and difficult to identify. In fact, a number of users who want to find out about the ingredient of food in search engines still use queries in the form of text. This study proposes the KNN algorithm combined with HSV color space and feature extraction, such as histogram-based texture features, lacunarity, and GLCM to group the food in the form of images. Testing using the (k) value on KNN, the best feature results obtained a high level of accuracy, recall, and precision as much as 100%, and an f1-score value of 1,000 from the combination of lacunarity features, histogram-based texture features, and HSV color space.

Topic: Computer Science and Information Technology

PAPER ID: 1570817536

An Insight into Power System Resilience and its Confounding Traits

Kehkashan Fatima (United Arab Emirates University, United Arab Emirates); Hussain Shareef (United Arab Emirates University, United Arab Emirates); Abdullah Akram Bajwa (University of Malaya, United Arab Emirates)

Abstract – sive review of current practices for resilience of power systems from various perspectives. First, several definitions, and confounding

characteristics of resilience in the power system domain are described. Next, various curves for resilience, and quantitative metrics suggested in recent years for power system resilience are investigated followed by a summary of evaluation and enhancement strategies for power system. The study offers an analysis procedure

Topic: Electrical and Electronic Technology

PAPER ID: 1570817569

Development of a Virtual Reality System Based Cycling Training for Health Promotion of Individuals Post-Stroke

I Putu Lesmana (State Polytechnic of Jember, Indonesia)

Abstract – The objective of this paper is to develop and test the feasibility of a virtual reality system-based cycling that enables individuals post-stroke with lower extremity impairments to train balance, gait, and cardiorespiratory fitness that enhance possible transfer of training from virtual environment to real world walking. The bicycle is equipped with novel mechatronic components with sensors for acquiring walking kinematics and physiological parameters to monitor training safety while running serious games in a virtual cycling environment with 3D visual, audible and haptic feedback. The mechatronic components of pedal allow the user to determine balance on both feet and range of motion of both ankles to detect tilt in the dorsal and plantar flexion. The control box is used to collect data from sensors on both pedals, pedal revolutions, and heart-rate, which are processed and transmitted to the computer. Moreover, novel software system allows users to manipulate virtual environment and change the perception of how fast user is moving in the virtual environment based on Fuzzy system. From the results of the preliminary test of the prototype on two healthy control participants during 4-week cycling training, it is found that use of the prototype is safe, feasible, and efficacious for post-stroke training and improving aerobic capacity and walking endurance.

Topic: Electrical and Electronic Technology

PAPER ID: 1570817571

The Transition of Independent Bookselling to Digital Space: A Case Study of Transit Bookstore's Instagram

Paramita Ayuningtyas (Bina Nusantara University, Indonesia); Listya Ayu Saraswati (Bina Nusantara University, Indonesia)

Abstract – Many industries experience and struggle with financial hardship during the global COVID-19 pandemic, including bookselling industry. Due to the imposed lockdown and stay-at-home orders, retail bookstores had to transform their selling method to online selling. This study investigates the issue further by focusing on independent bookstores, specifically the shift from physical space to digital space. A case study is conducted on one independent bookstore based in Jakarta, namely Transit Bookstore. This paper discusses what kind of challenges that occur, the strategies they apply to adapt, and how they use Instagram during the pandemic. The data are collected by conducting a mixed method (textual-visual analysis and semi-structured interview) and then analyzed using qualitative approach. The result shows how by incorporating social media into their operations, Transit Bookstore manages to not only sell and promote their books but also engage with the reading community and create a new book buying experience. The objectives of this paper are to make a significant contribution to the discussion of independent bookstores in Indonesia and to offer a new perspective on the impact of social media for independent bookselling.

Topic: Technology for Language and Literature Study

PAPER ID: 1570817653

Exploring Indonesian Netizen's Emotional Behavior Through Investment Sentiment Analysis Using TextBlob-NLTK (Natural Language Toolkit)

Esther Talahaturuson (Universitas Narotama, Indonesia); Agustinus Bimo Gumelar (Institut Teknologi Sepuluh Nopember, Indonesia); Adri Gabriel Sooai (Universitas Katolik Widya Mandira, Indonesia & University Centre of Excellence on Artificial Intelligence for Tourism and Agriculture, Indonesia); Sueb Hadi (Universitas Wijaya Kusuma Surabaya, Indonesia); Suprihatien S (Universitas Wijaya Kusuma Surabaya, Indonesia); Hikmah Ali Altway (STIE AMM Mataram, Indonesia); Chatarini Septi Ngudi Lestari (School of Foreign Language and Literature Satya Widya, Indonesia); Perwi Darmajanti (Politeknik Perkapalan Negeri Surabaya, Indonesia); Urip Zaenal Fanani (State University of Surabaya, Indonesia); Tuty Hariyanti (Indonesia Naval Academy, Indonesia); Sengguruh Nilowardono (Narotama University, Indonesia); Sulistiyani Sulistiyani, M. Pd. (STKIP Bina Insan Mandiri & English Education Department, Indonesia)

Abstract – The investment industry has recently continued to provide the greatest experience and has grown the number of investors to this day. It also increases the quantity of traded investment assets because of its varied central and decentralized operating processes. Yet another aspect that can't be isolated from the investment process is price volatility and monetary policy. This means that the present price movement is influenced by every market mood. According to this study, a three-month period of tweets from Indonesian citizens was used to analyze attitude towards investment patterns in Indonesia. Because of the large number of people throughout the world who use Twitter to voice their opinions on investments, Twitter was selected as the primary source for this study. Twint, an open-source Python library, is used to retrieve tweet data. To process and analyze each tweet's data, TextBlob will be used, which values subjectivity and polarity. There were 92% favorable feelings and 42% positive sentiments on Indonesian tweets after a succession of research stages. These results were obtained by the limitation of data preprocessing and data labeling has been used.

Topic: E-commputing Technologies

PAPER ID: 1570817663

Factors Influencing Government Employees To Adopt E-Government Innovation: Systematic Literature Review

Yauma Miftah Puja Nugraha (Institut Teknologi Sepuluh November, Indonesia); Tony Dwi Susanto (ITS, Indonesia)

Abstract – Innovation is a constant theme of Government and reforming the government sector and transforming it into a digital public sector is efficient, effective, accountability, transparency, communication, access to stakeholder information, and it is necessary to improve the legitimacy of the social value creation process. E-government is a means by which existing processes need to be revisited and organizational behavior changed to provide public services more efficiently. E-government cannot succeed except civil servants appreciate and hire e-government. This study uses literature search methodologies to explore the factors that affect e-government innovations from a civil servant perspective. In this survey, civil servants find several factors driving e-government innovation in three dimensions, namely Organizational, Technological, and Individual. This research produces a conceptual model that can be used in further research.

Topic: E-commputing Technologies

PAPER ID: 1570817664

Residential Property Price Prediction Using Machine Learning: MakanSETU

Yash Dilip Panchal (University of Mumbai, India)

Abstract – This project is an emerging and advanced solution in the Real Estate industry. The real estate industry is on the boom in the 21st century and trading Real Estate has become a great opportunity for Real Estate owners as well as others. The projection of the Real Estate industry in business acquisitions is expected to reach 11 trillion USD. However, there is no proper solution to deal with inaccurate prices of properties online. The system proposed in this paper uses Native and new age Machine learning algorithms to predict and validate the value of residential properties in Mumbai Metropolitan Region, India. Supervised learning is what used in the system with a list of Regressors to be tested to get the best result. Some of the regression algorithms used are Simple Linear regression, Decision tree regression, Random Forest regression (100 n-trees, 200 n-trees, and 500 n-trees), and Extreme Gradient Boost regression algorithm. The development of this system has followed a series of Data Collection, data handling, data processing, EDA, Feature engineering and Feature selection. The system enables investors to get a fair value of a property. The system is considered successful and ready to implement in the real work.

Topic: Computer Science and Information Technology

PAPER ID: 1570817667

Prediction of Nutritional Requirements for Children's Growth and Adolescents Using Machine Learning

Agus Hermanto (Universitas 17 Agustus 1945 Surabaya, Indonesia); Agustinus Bimo Gumelar (Institut Teknologi Sepuluh Nopember, Indonesia); Evelyn Ongkodjojo MD. (Widya Mandala Surabaya Catholic University, Indonesia); Wilson Christianto Khudrati, MD. (Widya Mandala Surabaya Catholic University, Indonesia); Andre Young MD. (Widya Mandala Surabaya Catholic University, Indonesia); Maria Magdalena Djoka MD. (Widya Mandala Surabaya Catholic University, Indonesia); Alvin Julian MD. (Widya Mandala Surabaya Catholic University, Indonesia); Dewa Ayu Liona Dewi MD. (Widya Mandala Surabaya Catholic University, Indonesia); Paul Tahalele (Widya Mandala Catholic University, Indonesia)

Abstract – In many countries, malnutrition and stunting in children and adolescents are on the rise. They pose a substantial threat to current and near-future health care systems since they are associated with a number of comorbidities. Predictive models for children's and adolescent nutritional needs and outcomes are essential to better understanding its origins and creating suitable prevention approaches. Machine learning models are becoming increasingly useful in this field because of their predictive strength, their ability to model complex, nonlinear interactions between variables, and their capacity to handle high-dimensional data. For non-binary classification problems, the Decision Tree 4.5 machine learning algorithm is a good fit. Decision Tree 4.5 has advantages over similar systems when it comes to handling data in a range of formats. This study examined the nutritional needs of primary school-aged children. Using a decision tree, 7 until 12-year-old elementary school students were tested with a total population of 360 students, and the results showed that 79% of them had normal weight, 12.5% were underweight, and 7.8% were overweight.

Topic: e-Health Technology

PAPER ID: 1570817682

Comparative Study on Image Filtering for Herbal Plant Identification Using Xception Based Convolutional Neural Network

Amiel Joseph Lozada (University of San Carlos, Philippines); Nigel L. Monsanto (University of San Carlos, Philippines); Glenn Pepito (University of San Carlos, Philippines)

Abstract – Plant identification, through the use of Convolutional Neural Networks (CNNs), has been utilized in several studies over recent years. With CNNs being almost the default approach when dealing with image processing, the researchers shifted their focus on image filtering techniques. This study determined to investigate the most effective image filter for herbal plant identification. An image dataset of eleven medicinal plants was used by the researchers, made into four copies for image processing. Three image filters were then applied to three different copies of the dataset, namely: Canny Edge Detection filter, Color Saturation filter, and Contrast Enhancement and Thresholding filter; none were applied to the fourth copy since it served as the control group of the study. The Xception model was trained using each of the processed datasets. Afterwards, the researchers discerned which CNN and image filter yielded the most accurate results during testing through the confusion matrix. It was calculated and concluded that the Color Saturation filter was the best image filtering technique to use for identifying herbal plants, achieving 100% in the metrics used during the study. The results of this study can be applied in works and systems that focus on plant identification and image processing in general.

Topic: Computer Science and Information Technology

PAPER ID: 1570817723

Spatio-Temporal Analysis Coastal Areas For Detection Mangrove Greenery Using Combined Mangrove Recognition Index

Fidiatus Sakinah (Study, Indonesia); Indra Ranggadara (Universitas Mercu Buana, Indonesia); Suhendra Suhendra (Mercu Buana University, Indonesia); Inna Sabily Karima (Universitas Mercu Buana, Indonesia)

Abstract – Mangroves provide various purposes, including avoiding coastal erosion, acting as a water filter, and breeding grounds for marine animals. Mangrove forest areas have experienced a significant decline in crucial functions due to changes, such as the transition of forest areas into ponds, environmental pollution, and illegal logging. This research obtained data using Landsat 8 OLI imagery to detect Tanara Coast, Serang, Banten changes. Because of this problem, research was conducted using the extraction of the Combined Mangrove Recognition Index (CMRI) feature and the Support Vector Regressor (SVR) algorithm to measure what percentage of land changes occur in the mangrove forest area. The research took data from May 01 to August 01, 2019, with clipping as a preprocessing process. This research obtained the highest vegetation value of 0.974966, which means that from May 01 to August 01, mangrove forest vegetation is in good condition

Topic: Computer Science and Information Technology

PAPER ID: 1570817741

Integration of Fuzzy Multi-Attribute Decision Making and Clustering Methods for Student Apprenticeship Recommendations

Wiwiek H Suristiyanti (Universitas Dian Nuswantoro, Indonesia); Sholihul Ibad (Universitas Dian Nuswantoro, Indonesia); M. Nafis Alfa Farah (Universitas Dian Nuswantoro, Indonesia); Nova Rijati (Universitas Dian Nuswantoro, Indonesia); Aris Marjuni (Dian Nuswantoro University, Indonesia)

Abstract – Harmonious vocational education and training with the company, industry, and occupation are carried out by providing access to apprenticeships and industrial work practices. This study proposes a method of clustering student competencies in vocational education and training institutions as a recommendation for students who can be apprenticed to the company, industry, and occupation. The Fuzzy Multi-Attribute Decision Making (FMADM) approach is proposed with a combination of two methods, namely Fuzzy Simple Additive Weighting and Fuzzy Technique for Order Preference by Similarity to Ideal Solution (FSAW-TOPSIS). FSAW-TOPSIS provides a more optimal solution and better performance. The FSAW-TOPSIS method which is integrated with clustering produces an accuracy of 100% for the Decision Tree method, with a Neural Network with the best accuracy marked by the smallest RMSE value of 0.246. FSAW-TOPSIS integration and clustering provide optimal student apprenticeship recommendations as material for decision-making for leaders of vocational education and training institutions to apprentice their students in the company, industry, and occupation.

Topic: Computer Science and Information Technology

PAPER ID: 1570817752

Factors Affecting Intention to Use a New Human Resource Information System at One of the Small and Medium Enterprises in Indonesia

Damar Aji Irawan (Bina Nusantara University, Indonesia); Elia Oey (Bina Nusantara University, Indonesia); Baptista Pamungkas (Bina Nusantara University, Indonesia)

Abstract – This study aims to analyze factors affecting the intention to use a new human resource information system at PT. XYZ. PT. XYZ is a small-medium enterprise located in Jakarta, Indonesia. Due to the Covid-19 pandemic, the company switched from a manual to an electronic human resource information system. The sample of this study is all employees of PT. XYZ. The questionnaires were distributed directly to 36 employees of PT. XYZ. The data were analyzed using multiple linear regression analysis. The results showed that owner and technology vendor support significantly influence the intention to use a new human resource information system. The novelty of this research is combining the technology acceptance model theory, the technology-organization-environment framework, and the Yale communication model.

Topic: E-commputing Technologies

PAPER ID: 1570818104

Hybrid Method of Selection Features to Improve Performance of Covid-19 Classification

Sabir Rosidin (Universitas Dian Nuswantoro, Indonesia); Muljono Muljono (Dian Nuswantoro University, Indonesia); Catur Supriyanto (Faculty of Computer Science, University of Dian Nuswantoro, Semarang, Indonesia);

Abstract – In this study, to improve the performance of the classification algorithm by using the Hybrid of selection features on Covid-19 data, this study utilizes Filtering and Wrapper Sequential Backward Selection (SBS), which aims to reduce the initial feature sub-space dimensions from N (total features) to K (best features) with minimum reduction in model performance to increase computational efficiency and reduce generalization errors to produce the best performance. From the whole process of testing the Hybrid method by combining filtering and wrapper techniques, it can be concluded that from a total of 8974 features, after entering the filtering process, 184, then after applying the wrapper technique to 170 selected features, after that performance evaluation was carried out and got the results SVM performance with large data, namely with an accuracy of 83.75% and testing on KNN by testing the parameter value K = 5, got the results of accuracy of 79.47%, the classification of the K value was determined by the researcher. The overall precision comparison is KNN with a precision value of 32.56% and SVM with a precision value of 87.59%, recall with KNN results of 14.18 %, and SVM of 20.05 %, F1-Score comparison of KNN of 17.31% and SVM of 27.51%.

Topic: Computer Science and Information Technology

PAPER ID: 1570818568

Study Literature Review: Discovering the Effect of Chatbot Implementation in E-commerce Customer Service System Towards Customer Satisfaction

Randy Antonio (BINUS University, Indonesia); Anderies Anderies (BINUS University, Indonesia); Alexander Agung Santoso Gunawan (Bina Nusantara University & University of Indonesia, Indonesia); Nadya Tyandra (BINUS University, Indonesia); Linggar Tembus Nusantara (Binus University, Indonesia);

Abstract – Customer service plays a crucial role for a company. As an important aspect of e-commerce companies, they would be required to directly interact and try to solve customers' problems that might occur anywhere and anytime. However, the limitation of human man hours became a barrier to overcome customers' problems. On one hand, the rapid development of technology was predicted to replace the traditional human customer service with an Artificial Intelligence agent. On the other hand, this replacement affects the customer satisfaction. This paper performed a study literature review to discover the effect of chatbots and its impact towards customer satisfaction. In an e-commerce customer service use case, chatbots could be implemented in a number of methods. The methods implemented by chatbots are avatarbased, verbal-based, text-based, and menu-based. Research showed that text-based chatbot is the most commonly used methodology and has advanced the most, where some are implementing higher level machine learning methods, such as deep learning. The usage of such chatbot in e-commerce customer service systems will lower the cost but might also lower customer satisfaction, due to reasons such as unsatisfying answers and inhuman behavior. Research showed that even a more sophisticated chatbot doesn't always mean higher customer satisfaction, even with high accuracy ratings. To look into customer satisfaction, this paper has identified 4 aspects of a chatbot that are relevant to customer satisfaction, which are privacy, reliability, personalization, and responsiveness. Chatbots currently excel in some of these quality measures, but require further research to effectively replace human customer service agents.

Topic: Technology for Language and Literature Study

PAPER ID: 1570818851

Implement Android Application for Determination and Monitoring Blood Chemistry

Ima Kurniastuti (University of Nahdlatul Ulama Surabaya & Unusa, Indonesia); Tri Deviasari Wulan (Universitas Nahdlatul Ulama Surabaya, Indonesia); Difran Nobel Bistara (Universitas Nahdlatul Ulama Surabaya, Indonesia)

Abstract – Examination of blood chemistry, especially blood glucose, uric acid and cholesterol in the body is a test carried out in routine health checks or in the process of diagnosing a disease. The research aims to produce an android-based application that can determine and monitor the results of blood chemistry examinations that are user-friendly for the community. The research method is literature study, design flowchart, design user interface (UI), implement application, and testing application. The first stage is a literature study to collect data and information about blood chemistry followed by design application regarding the flowchart design and interface of the application. The next stage was implement application regarding the application implementation process based on the design application using android studio and testing application using white-box testing and black-testing methods. Overall the application has been successfully designed and built according to the research method. The results of testing application show that the application runs well and there are no errors. This indicates that the application has been successful and can be used by the public as a supporting application in routine blood chemistry examinations.

Topic: Computer Science and Information Technology

PAPER ID: 1570819166

Application of Grayscale Co-occurrence Matrix (GLCM) Method for Classification of Quality Type of Guava Leaves as Traditional Medicine Using Neural Network Algorithm

Sholihul Ibad (Universitas Dian Nuswantoro, Indonesia); Wiwiek H Suristiyanti (Universitas Dian Nuswantoro, Indonesia); M. Nafis Alfa Farah (Universitas Dian Nuswantoro, Indonesia); Nova Rijati (Universitas Dian Nuswantoro, Indonesia); Catur Supriyanto (Faculty of Computer Science, University of Dian Nuswantoro, Semarang, Indonesia)

Abstract – Currently, there are still many people who use traditional medicine such as the use of guava leaves as anti-diarrhea medicine. But the types of guava leaves have different qualities for traditional medicine, some types of guava leaves have different leaf shape characteristics, and it will be difficult to distinguish the quality of the leaves. The purpose of this study was to classify the quality of guava leaf species with the classification of "good" quality and "bad" quality. The method used in this study starts with data collection, then the next process is Pre-Processing. After doing the Pre-Processing, the GLCM method will be applied with the Matlab application, the results of the application of the GLCM method will produce a data matrix which will later be used for the process of implementing the neural network algorithm on RapidMiner for the classification process and will produce an accuracy value. The results of this study produce several attributes, namely Angular Second Moment (ASM) as data attribute 1, contrast as data attribute 2, Inverse Different Moment (IDM) as data attribute 3, entropy as data attribute 4, and correlation as data attribute 5 in the sample type. Guava was tested, then the final result of the application of the neural network algorithm in this study resulted in an accuracy of 95%.

Topic: Computer Science and Information Technology

PAPER ID: 1570819474

GLCM Feature Extraction and PCA for Tuberculosis Detection with Neural Network

M. Nafis Alfa Farah (Universitas Dian Nuswantoro, Indonesia); Guruh Fajar Shidik (Universitas Dian Nuswantoro, Indonesia); Ricardus Anggi Pramunendar (Universitas Dian Nuswantoro, Indonesia); Wiwiek H Suristiyanti (Universitas Dian Nuswantoro, Indonesia); Sholihul Ibad (Universitas Dian Nuswantoro, Indonesia)

Abstract – Automatic recognition system for medical images is quite a challenging job in the medical image processing field. X-rays, CT, and MRI all provide medical pictures and other modalities which are utilized for diagnostic purposes. As in medical sector, detecting tuberculosis (TB) is a very important stage before further treatment is carried out. Human interpretation of a vast array of X-ray pictures can result in detection mistakes, so an automatic recognition system is needed that can detect TB disease. In this study, we use a dataset with two classes and extract GLCM-based texture features from each class, and apply them to a two-layer feed-forward neural network, which gives a classification rate of 99%.

Topic: Computer Science and Information Technology

PAPER ID: 1570820078

Space-Efficient Probabilistic Data Structure Ribbon Filter: Analysis, Design, and Optimized Implementation

Byatriasa Pakarti Linuwih (Telkom University, Indonesia); Gandeva Bayu Satrya (Telkom University, Indonesia); Satria Akbar Mugitama (Telkom University, Indonesia); Mochamad Syarief Maulana (Telkom University, Indonesia)

Abstract – Filtering a data structure that is too close to a set of hashable keys may return false positives. Existing practical filters, such as the Bloom filter, require a space overhead of at least 20% because Bloom only performs a probabilistic check of assigned memberships, internal hashes, and can easily populate the entire filter causing potential minor DOS. This paper, as a further study, proves the Ribbon filter as a novel filter for static sets with various configurable space overheads and false positive rates at competitive speeds over that range. In many cases, the Ribbon is faster than existing filters for the same space overhead or can achieve under 10% space overhead with some additional CPU time. Ribbon filters resemble Xor filters modified to maximize locality and are constructed by solving linear band-like systems over Boolean variables.

Topic: Computer Science and Information Technology

PAPER ID: 1570820106

Selection of Optimal Transportation Routes in the Distribution of Temanggung Original Robusta Coffee using Genetic Algorithms

Rindra Yusianto (Universitas Dian Nuswantoro, Indonesia); Kusnadi Kusnadi (Singaperbangsa University, Indonesia)

Abstract – The selection of optimal transportation routes in the distribution of agro-industrial commodities consists of the need to visit locations that are the safest and optimal by considering the risk of commodity damage. In practice, the amount of time available is limited, complex, and uncertain, so metaheuristic algorithms are used. This study aims to help decision-makers choose the optimal transportation route in the original Temanggung robusta coffee distribution using Genetic Algorithms (GA). We used five interrelated research variables: location point, modes of transportation, path traversed, vehicle capacity, and distribution cost. We discussed the construction of the population, chromosome representation, descriptions of the fitness function, natural selection, crossover, and mutation. The results showed that the minimum distance traveled was 264.8 Km, the chromosomes having that distance were Z1" - Z2" - Z5" - Z3" - Z4" - Z6" - Z8" - Z7", and all chromosomes have the same route, namely Node1 - Node2 - Node5 - Node3 - Node4 - Node6 - Node8 - Node7. The results of GA transportation optimization can find the minimum solution by choosing the optimal transportation mode at the crossover probability value of 1, and mutation opportunity 0.2 produces a minimum value (cost) of Rp. 2,150.00. It shows that GA can be used to choose the optimal transportation route in the distribution of the original Robusta coffee of Temanggung. For further research, researchers can add resistance variables at each node.

Topic: Computer Science and Information Technology

PAPER ID: 1570820108

Smart potato grading using image processing and fuzzy grading system

Rindra Yusianto (Universitas Dian Nuswantoro, Indonesia)

Abstract – Horticultural commodities have distinctive and unique characteristics, such as different colors, shapes, and sizes for each harvest. Grading is currently being done, generally based on these characteristics. The grading person must be an expert and maintain the respective consistency for each commodity characteristic, which requires more time, cost, and risk. This study aims to design a smart potato grading structure by combining different parameters: color, shape, and size. We use image processing with a fuzzy grading system. The camera correctly captures the potato image and is processed by the image processing room. Captured images and database images provide an output rating by comparison. The system offers 2-D image parameter detection-color, shape, and size count. We also design knowledge base fuzzy rules. This system gives better results compared to the current grading. The results showed that by using the fuzzy logic grading system, the grading accuracy was 86%. There are still errors in reading the color of potatoes (4%). For further research, researchers can develop this smart grading to determine potatoes' quality

Topic: Computer Science and Information Technology

PAPER ID: 1570820305

The Adoption Model of People Analytics in Higher Education: A Soft System Approach

Sekar W Prasetyaningtyas (Binus Business School, Binus University, Indonesia)

Abstract – The Adoption of People Analytics process, especially in higher education, is highly complex and should be understood by scholars. We use seven stages of soft systems methodology to contribute to a deeper understanding of The Adoption of People Analytics process, especially in higher education as a policy issue. The research was done in one of the biggest private university in Indonesia. The method used was an exploratory study. In-depth interviews were done to gather data. The main interviewees were all stakeholders (HR Director, Business Incubator Director, Research Manager, and more) related to the process. The outcomes showed the actors involved and the obstacles experienced by the actors in transforming the existing condition into the analytics one. The paper proposed a people analytics adoption model in higher education using the soft system approach. The research limitation was due to the limited research object used, so broader research using this approach is urgent to understand the model

Topic: E-commputing Technologies

PAPER ID: 1570821173

Digital Certificate Authentication with Three-Level Cryptography (SHA-256, DSA, 3DES)

Bagas Dwi Yulianto (Dian Nuswantoro University, Indonesia); Budi Handoko (Universitas Dian Nuswantoro, Indonesia); Eko Hari Rachmawanto (Dian Nuswantoro University, Indonesia); Pujiono Pujiono (Universitas Dian Nuswantoro, Indonesia); Moch Arief Soeleman (Sepuluh Nopember Institute of Technology & Dian Nuswantoro University, Indonesia)

Abstract – The rapid development of technology, makes it easier for everyone to exchange information and knowledge. Exchange information via the internet is threatened with security. Security issues, especially the issue of the confidentiality of information content and its authenticity, are vital things that must protect. Peculiarly for agencies that often hold activities that provide certificates in digital form to participants. Digital certificates are digital files conventionally used as proof of participation or a sign of appreciation owned by someone. We need a security technology for certificates as a source of information known as cryptography. This study aims to validate and authenticate digital certificates with digital signatures using SHA-256, DSA, and 3DES. The use of the SHA-256 hash function is in line with the DSA method and the implementation of 3DES which uses 2 private keys so that the security of digital certificate files can be increased. The pixel changes that appear in the MSE calculation have the lowest value of 7.4510 and the highest value of 165.0561 when the file is manipulated, it answers the security of the proposed method is maintained because the only valid file is the original file.

Topic: Computer Science and Information Technology

PAPER ID: 1570821186

Optimization of Infant Birth Predictions during the Covid-19 pandemic using the Particle Swarm Optimization-based K-NN Algorithm method

Ayu Hernita (Universitas Dian Nuswantoro, Indonesia); M Soeleman (Universitas Dian Nuswantoro, Indonesia); Ahmad Zainul Fanani (Universitas Dian Nuswantoro, Indonesia)

Abstract – Every mother wants to give birth to a perfect and healthy child. many things cause newborns to die, some of which are malnutrition during the womb, fetuses that have abnormalities in the body, and factors of premature birth. Deaths due to exposure to the Covid-19 virus are certainly a serious problem. Several factors influence childbirth, such as placental and fetal factors, maternal factors, lifestyle factors, and what is happening now due to the covid-19 virus. Therefore, the author is interested and wants to review to find out the characteristics of mothers who give birth due to exposure to the covid virus and are normal. The results of tests carried out by optimizing the Particle Swarm Optimization-based K-NN The algorithm resulted in an accuracy value of 93%. The accuracy value can be said to be good enough to determine the characteristics of the mother who gave birth under normal or premature conditions

Topic: Computer Science and Information Technology

PAPER ID: 1570821295

Student Graduation Prediction Model using Deep Learning Convolutional Neural Network (CNN)

Abu Salam (University of Dian Nuswantoro, Indonesia); Junta Zeniarja (Faculty of Computer Science, University of Dian Nuswantoro, Semarang, Indonesia); Dhevan Anthareza (University of Dian Nuswantoro, Indonesia)

Abstract – Students are the most important part of a university's life cycle. When compared to the number of students obtained in the same academic year, the number of students graduating from a university often has a small ratio. This low student graduation rate can be attributed to a variety of factors, including the abundance of student activities, as well as economic and other considerations. This necessitates the existence of a model that can determine whether or not a student will be able to graduate on time. Student graduation on time is one of the most important factors in determining a university. With the same ratio, the higher the level of new students at a university, the more students who graduate on time. If many students do not graduate on time from all registered students, the number of student data and academic data increases. As a result, the university's profile and reputation will suffer, potentially jeopardizing the university's accreditation value. To address this, we need a model that can predict student graduation and then be used to inform policy decisions. The goal of this research is to propose a Deep Learning classification model that uses the Convolutional Neural Network (CNN) algorithm to predict student graduation. The classification model with the CNN algorithm produced a high accuracy value of 87.44 %.

Topic: Computer Science and Information Technology

PAPER ID: 1570821322

Effects of Social Media Marketing in Cloud Kitchen Towards Online Platform in Indonesia

Lim Sanny (Bina Nusantara University, Indonesia)

Abstract – This study aims to identify the effect of social media marketing activity and e-WOM mediated by brand awareness on purchase intention in buying food and beverages in Cloud Kitchen. The variables used in this study are new research in the field of the Cloud Kitchen platform. This study uses a qualitative method and uses online questionnaire as its instrument with 415 respondents who are aware of the concept of Cloud Kitchen but never used the online Cloud Kitchen platform, using Google Form. The results of the questionnaire data were processed using SEM PLS. This study shows that there is an influence of social media marketing activities and e-WOM has a direct or mediated influence by brand awareness on the interest in buying food and beverages in the cloud kitchen.

Topic: E-commputing Technologies

PAPER ID: 1570821325

Image Processing in 3D Printing Application: Study Case of Liver Organ

Putri Heriyadi (Universitas Dian Nuswantoro, Indonesia); Menik Dwi Kurniatie (Universitas Dian Nuswantoro, Indonesia); Talitha Asmaria (Indonesian Institute of Sciences, Indonesia); Dita Ayu Mayasari (Universitas Dian Nuswantoro, Indonesia)

Abstract – Because of the quick pace of growth, 3D printing is creating new teaching and learning tools for medical education. The method of transforming digital objects into genuine physical models from a CT-Scan in order to show anatomical structures is known as 3D printing. This study makes use of CT-Scan results from hepatic body sections that will be transferred into Digital Imaging and Communications (DICOM) format. It is then segmented with 3D Slicer software, saved as a Standard Triangulation Language (STL) file, and printed with Poly Lactic Acid (PLA). Testing 3D printing by measuring length, width, height, and volume with calipers. The measurement used in 3D printing is useful so that the produced organs match the imaging data and can be used by medical students as learning media.

Topic: Electrical and Electronic Technology

PAPER ID: 1570821352

User Experience Model using Concise User-Centered Design in Small and Medium Enterprise E-Commerce

Herman Try Maulana (Universitas Dian Nuswantoro, Indonesia); Umi Rosyidah (Universitas Dian Nuswantoro, Indonesia)

Abstract – There are difficulties for small and medium enterprises (SMEs) to use the online platform, specifically e-commerce. Most of the problems are related to user experience because the SMEs owners are very diverse in terms of digital literacy. For example, snack SMEs managed by elderly households are having difficulties operating e-commerce due to a lack of understanding of the user interface. There are many research used User-Centered Design (UCD) as a framework to develop the user experience for e-commerce. It is generally divided into several sections such as defining the scope, analyzing the problem including personas, and usability problems to find user problems and needs. This study uses concise UCD to model the user experience in SMEs e-commerce. The way to collect the SMEs information is combined in one process, namely the interview, starting with personal questions, habits, and about the business. This approach helps in determining difficult and complex decisions based on the user's point of view. The result shows the low-fidelity wireframe stage that could be the framework to develop the e-commerce user experience for SMEs.

Topic: E-commputing Technologies

PAPER ID: 1570821363

Hybrid Neural Network and Evolutionary Model for Detection of Rice Plant Disease

Aditya Paramananda (Dian Nuswantor University, Indonesia); Guruh Fajar Shidik (Universitas Dian Nuswantoro, Indonesia); Ricardus Anggi Pramunendar (Universitas Dian Nuswantoro, Indonesia); Moch. Soeleman (Universitas Dian Nuswantoro, Indonesia); Muljono Muljono (Dian Nuswantoro University, Indonesia); Christy Atika Sari (Dian Nuswantoro University, Indonesia)

Abstract – Rice production is still the most important thing for food needs in Indonesia. However, rice plants cannot be separated from pests and diseases, especially diseases in rice plants. Rice plant diseases can affect the amount of rice production. From these problems, we need a method that can detect rice plant diseases. In this study, we propose a hybrid model that combines Neural Network and Evolutionary Algorithm models and feature extraction of Gray Level Co-Occurrence Matrix (GLCM) to detect rice plant diseases. In this study, the evolutionary algorithm uses Genetic Algorithm (GA). The image dataset of rice plant disease is used in this study. The experimental results show that the accuracy of the proposed method produces an accuracy of 97.5%. From the results of research on rice plant diseases, this study produces the best accuracy compared to previous studies.

Topic: Computer Science and Information Technology

PAPER ID: 1570821389

Prediction of hourly solar radiation in Indonesia using LSTM

Dian Puspa Sari (University of Dian Nuswantoro, Indonesia)

Abstract – The value of solar radiation has many advantages to support optimal utilization of solar energy, from building design, solar power plant and agricultural system. However, solar radiation is an element that will affect to other weather parameters. Forecasting systems that have been carried out by previous researchers are predictions for data per-hour, per-day, per-month and even per-year. All forecasting processes are carried out using different multivariate meteorological parameters. Fluctuations in solar radiation can occur due to data errors or moving fast of clouds. In this study, we are using meteorological parameter: solar radiation, sun duration, relative humidity, dew point, air temperature, and sky cover. All these parameters will be used to predict hourly solar radiation. Long short-term memory (LSTM) is proposed in our works to discover best activation: ReLU, sigmoid, tanh. As a result, RELU is best activation which has the smallest Mean Square Error (MSE) value is 0.1885, compared with other activation value: sigmoid MSE value is 0.2359 and tanh MSE value is 0.3270. By using ReLU, the wall time is 1min 51s and calculation process stops in 18th epoch. Optimum learning rate become 0.00249 and wall time 1min 38s. The output prediction is hourly solar radiation one-day ahead that we can used as a data solar radiation information.

Topic: Electrical and Electronic Technology

PAPER ID: 1570821415

DESITA: E-Service Optimization of Student Final Project Management Based on Website Technology

Febrianur Ibnu Fitroh Sukono Putra (Universitas Dian Nuswantoro, Indonesia); Amron Amron (Dian Nuswantoro University, Indonesia); Masitha Wardhani (Universitas Dian Nuswantoro, Indonesia); Risanda Budiantoro (Universitas Negeri Semarang, Indonesia)

Abstract – This research aims to implement a new model of e-business technology to optimize the three higher education principles. A strategic step that can be taken is to apply digitalization to increase the selling value of universities in the education industry and increase the usefulness of the satisfaction of lecturers and students. The research approach is exploratory qualitative with data collection techniques through interviews, observations, and literature studies. The sampling method in this study used non-probability sampling (purposive sampling). It can conclude that several supporting factors that influence optimization of the three principles of higher education are flexibility of workplace and time, as well as the use of information technology which is easier to use and has high accessibility. The urgency of this research is to support university programs in implementing smart university so that the three higher education principles become more comprehensive. The stuff that needs to be prepared is integration in implementing the program, ideally to be replicated more easily by the dean in each faculty.

Topic: E-commputing Technologies

PAPER ID: 1570821477

Giziku Baik App: preventing stunting and nutritional status diagnose in a adolescent period

Vilda Ana Veria Setyawati (Universitas Dian Nuswantoro, Indonesia); Arif Kurniadi (Universitas Dian Nuswantoro, Indonesia)

Abstract – Adolescents have a future role as prospective parents and agents of change, which is crucial in preventing stunting. Behaviors that can be implemented include: A balanced nutritional pattern in daily food and snacks, Adequate parenting from the family, Essential health services, and Environmental health. All these good things teenagers can do from themselves to the broader community to prevent stunting. This study aims to build an android-based information system that processes, provides a simple diagnosis of adolescent stunting problems independently, progress on the results of teenage nutrition development activities, whose data can be stored and can be found immediately continuously, which will be used in decision making, policy formulation, follow-up responses and planning materials for stakeholders. The development of the Giziku system application both uses the waterfall method. There are consist of Requirements definition, Systems and Software Design, Implementation and unit testing, Integration System testing, Operation and Maintenance. The Giziku Baik App features are available, including Status gizi, Pengetahuan, Praktek Gizi, Kebiasaan Makan, dan Edukasi Gizi. All menu in Giziku Baik App passed the validity test of blackbox testing.

Topic: e-Health Technology

PAPER ID: 1570821486

Defect Detection of Agricultural Commodities using Image Processing and Artificial Neural Networks

Rindra Yusianto (Universitas Dian Nuswantoro, Indonesia); Herwin Suprijono (Dian Nuswantoro University, Indonesia);

Abstract – Production losses of agricultural commodities on agricultural land due to product defects depend on the level of pest and disease attacks. Defects cause the product not to be harvested or rejected by the market. Data from the Ministry of Agriculture of the Republic of Indonesia in 2021 shows the percentage of defective products for this commodity is 5%. This study aims to detect defects in agricultural products using image processing and artificial neural networks. We used the screening threshold method with potato research samples from Dieng, Indonesia. The study results for spot defects showed that from 100 training data, there were five incorrect identification data, so the accuracy of the training process was 95%. At the same time, the hole defect accuracy is better, which is 97%. It shows that defects in agricultural commodities can be detected using this method. For further research, the development of agricultural product sorting can combine sorting techniques with this method.

Topic: Computer Science and Information Technology

PAPER ID: 1570821796

Optimization of Horticultural Food Commodity Distribution Routes using Genetic Algorithm with Crossover Partially Match

Rindra Yusianto (Universitas Dian Nuswantoro, Indonesia); Valentina Widya Suryaningtyas (Universitas Dian Nuswantoro, Indonesia); Sugarindra Sugarindra (Universitas Islam Indonesia Yogyakarta, Indonesia)

Abstract – Horticultural food commodities have unique characteristics, namely perishable, sensitive to weather changes, and not durable. In addition, the distribution of these commodities is also faced with uncertainty along highly complex routes. We use metaheuristic methods to find solutions to these problems. This method solves the problem using algorithms for optimization. This study aimed to determine the most optimal route using a genetic algorithm with partially matched crossover. The GA stages in this study include (1) Population Initialization, (2) Selection, (3) Crossover, and (4) Mutation. We use the Random Generator Algorithm method to generate the initial population. As for the selection process, we use the Roulette Wheel Selection method. In the crossover process, we use Partially Matched Crossover. We used ten chromosomes with seven genes each. The results of this study indicate that the best route is obtained in the second generation, namely through node1 - node7 - node2 - node6 - node5 - node3 - node4 - node1 with an optimal distance of 159 km. For further research, consider the spatial conditions to come up a better solution.

Topic: Computer Science and Information Technology

PAPER ID: 1570822420

Performance Analysis of Multiple Linear Regression and Random Forest for an Estimate of the Price of a House

S Ayu Septianingrum

(Universitas Dian Nuswantoro, Indonesia); Moch. Soeleman (Universitas Dian Nuswantoro, Indonesia); Pujiono Pujiono (Universitas Dian Nuswantoro, Indonesia); M Alfian Dzikri (Universitas Dian Nuswantoro, Indonesia); Muslih Muslih (Dian Nuswantoro, Indonesia)

Abstract – The house is a human need for boards. House prices that continue to rise every year make it difficult for some people to buy a house according to their respective financial capabilities. Many property developers in big cities continue to build housing, including the South Jakarta area with many new arrivals. In this study, we will predict house prices using a comparison of 2 methods, multiple linear regression and random forest which produces a better RMSE value at an 8:2 comparison between training data and testing data, and the multiple linear regression method produces fewer errors. The 8:2 experiment produces an RMSE 3673441811.575 of Linear Regression and 3693111743.726 of Random Forest.

Topic: Computer Science and Information Technology

PAPER ID: 1570823278

Food Horticultural Supply Chain Performance Efficiency using Hybrid Model: SCOR - System Dynamic Simulation

Rindra Yusianto (Universitas Dian Nuswantoro, Indonesia)

Abstract – Today's highly competitive and dynamic business environment has forced horticultural food commodity farmers to implement better supply chain management (SCM) strategies. An essential aspect of SCM is how farmers and collectors can detect changes in supply chain (SC) behavior; these changes affect the efficiency of SC performance. This study aims to improve food horticultural SC performance efficiency. We propose a hybrid method using the supply chain operation reference (SCOR) and system dynamic simulation. To illustrate the methodology, we use a case study of the potato agroindustry in Wonosobo District, Central Java, Indonesia. The results show that the SC performance measurement consists of six perspectives, namely Plan, Source, Make, Deliver, Return, and Enable, with 23 KPIs. The SC value in January - March 2022 is 71.01%, meaning that the average measurement results are in a suitable category. The best scenario we propose is Scenario I, which is a reduction in indirect performance labor costs of IDR 600,000 in three months and an increase in efficiency of 11.08%. For further research, researchers can use this method to increase efficiency in the food processing industry made from food horticultural commodities.

Topic: Computer Science and Information Technology

PAPER ID: 1570823925

Indonesian Traffic Signs Recognition Using Convolutional Neural Network

Afu Ichsan Pradana (Dian Nuswantoro University, Indonesia & Duta Bangsa University, Indonesia); Supriadi Rustad (Universitas Dian Nuswantoro, Indonesia); Guruh Fajar Shidik (Universitas Dian Nuswantoro, Indonesia); Heru Agus Santoso (Dian Nuswantoro University, Indonesia)

Abstract – A traffic violation is one of the reasons for the increasing mortality every year. Traffic Sign Recognition (TSR) is an important component within the scope of Advanced Driver Assistance System (ADAS) and autonomous vehicles, which concern the problem of Traffic Sign Classification (TSC) and Traffic Sign Detection (TSD). The detection system of traffic signs purpose is to warn the driver about the traffic condition they will pass, so it can help the driver to decrease the accident. The traffic signs in every country have different shapes and colors, so the traffic signs have wide variability. This paper shows a traffic signs classification study using a Convolutional Neural Network (CNN). The data is from the traffic signs in Indonesia which consist of 41 traffic signs. The model proposed has shown good enough performance in which the accuracy score is 93% and the average F1-score is 94% in the recognition of traffic signs in Indonesia.

Topic: Computer Science and Information Technology

PAPER ID: 1570823936

A Conceptual Paper: Model of Integrated Surveillance System of Tuberculosis Based on the Internet of Things (IoT) for Accelerating Indonesia Free Tuberculosis in 2030

Sri Handayani (Universitas Dian Nuswantoro, Indonesia); Reece Hinchcliff (Queensland University of Technology, Australia); Farrikh Alzami (Universitas Dian Nuswantoro, Indonesia); Zainal Arifin Hasibuan (Dian Nuswantoro University, Indonesia)

Abstract – Tuberculosis (TB) remains a public health problem in the world. Second disease causing death after Covid-19. In 2020, case findings of TB cases in Indonesia slightly decreased compared to 2019, from 568.987 to 351.936 cases. To combat the disease, Indonesia has adopted the End TB program, targeting to reduce TB incidence to 65 cases per 100,000 population by 2030. At the same time, many challenges need to be overcome, such as low coverage of TB treatment, delay of diagnosis and treatment, and other factors associated. This paper aims to propose a model of an Integrated Surveillance System of Tuberculosis Based on the Internet of Things (IoT). The research will employ the End-to-End Life Cycle Automation System approach. Data collection will use two sources of data, primary and secondary data. The various research instruments (Questionnaire, interview guidelines, checklist observation, and IoT) will be used to capture primary data in this research. Secondary data sources will use reports of TB in multilevel (district/city, province, and national level), medical records of TB patients, news of TB prevention and treatment programs, demography and geography information, and poverty level. The data will produce a model of an integrated surveillance system. The field test will be conducted on the design and continuously improved based on the result. The information provided by the system will be available on a dashboard as a data visualization that can be easily accessed. This system will provide rapid and precise analysis to help the government achieve the Free TB agenda 2030. The system will help develop an effective and efficient TB prevention program in the community for health services based on their need.

Topic: e-Health Technology

PAPER ID: 1570823952

Component of Traffic Management System for Developing Countries: A Review

Farrikh Alzami (Universitas Dian Nuswantoro, Indonesia); Zainal Arifin Hasibuan (Dian Nuswantoro University, Indonesia); Sari Ayu Wulandari (Universitas Dian Nuswantoro, Indonesia); Filmada Ocky Saputra (Universitas Dian Nuswantoro, Indonesia); Jumanto Jumanto (Universitas Dian Nuswantoro, Indonesia); Pulung Nurtantio Andono (Universitas Dian Nuswantoro, Indonesia)

Abstract – Traffic Management System is part in field of transportation which help in building integrated system of people, vehicles, and roads. The main challenge in traffic management systems is predict the next possible condition of traffic with high precision to help avoid the traffic congestion which reduce the pollution, reduce the fuel consumption, reduce the stress level of road users, and reduce travel time. Traffic Management System in developed Countries is bit different with developing countries in matter of vehicular behavior. Thus, this paper presents a review about component of traffic management system for developing countries in point of view: 1) data source and data model; 2) prediction models. The paper also presents advantages, drawback and how to improve those components

Topic: Computer Science and Information Technology

PAPER ID: 1570823960

The Supply Chain Management Model of Small Medium Enterprise (SME): Case Study Dry Food Souvenirs

Mila Sartika (Universitas Dian Nuswantoro, Indonesia); Edi Noersasongko (Dian Nuswantoro University, Indonesia); Diana Aqmala (Universitas Dian Nuswantoro, Indonesia); Zainal Arifin Hasibuan (Dian Nuswantoro University, Indonesia)

Abstract – The SME sector contributes to Indonesia's GDP, which is 61.07% where SMEs are able to absorb 97% of the workforce in it. This proves the important role of MSMEs in the Indonesian economy is very large. However, attention to MSMEs is still not optimal, several obstacles are still faced by MSMEs, including supply chain management performance that has not been optimal so that SME productivity has not been maximized. The purpose of this research is to create a supply chain management based on ICT (Computer Information Technology) so that the performance of SMEs increases and is able to compete in the global market. The system was created with the aim of making the system in this study: 1) Ensure that the raw materials needed by SMEs are not interrupted, because with the system it is expected that the supply of raw materials and consumer demand for products can be balanced. 2) Optimizing the supply chain in SMEs, with an integrated system starting from farmers who provide raw materials, suppliers. 3) Turn on the nodes in the supply chain in order to create a digital ecosystem for SMEs

Topic: E-commputing Technologies

PAPER ID: 1570823966

Integration of The Indonesian Cultural Heritage and Natural History Based on Digital Technology 4.0: A Conceptual Framework

Zainal Arifin Hasibuan (Dian Nuswantoro University, Indonesia); Ahmad Zainul Fanani (Universitas Dian Nuswantoro, Indonesia); Jumanto Jumanto (Universitas Dian Nuswantoro, Indonesia)

Abstract – Culture and natural history are aspects of life that reflect the characteristics of a nation. Preservation and utilization of cultural wealth and natural history are very strategic for the sustainability of a nation. Until now, various problems and challenges have arisen, including: the widespread distribution of information, the absence of a centralized database to accommodate the existing information, the difficulty of knowing the diversity of cultural and natural history in each region, not using culture and natural history as a source of knowledge, culture and natural history has not been used as elements to build the nation's character, and the current cultural and natural history information has not been used for tourism development. Suppose the above problems are allowed to drag on. In that case, it is possible that the cultural wealth of the Indonesian people will be eroded and will slowly become extinct, or other nations will claim that this is their cultural wealth. Although conservation efforts have been carried out by various museums, national and regional libraries, and groups of activists to preserve cultural wealth, there are still many limitations to integrating and linking them to one another. Therefore, this preservation requires a digital 4.0 technology framework to be able to integrate and at the same time take advantage of this cultural and natural wealth for the welfare of the Indonesian nation. The digital technology 4.0 framework for preserving the Indonesian nation's cultural wealth and natural wealth will be developed using a Big Data approach from various data sources (data from various museums, documentation, publications, etc.) structured, semi-structured, and unstructured. Feature selection and feature extraction from Big Data will be carried out using Principle Components Analysis, Cluster Analysis. The feature extraction result is then used as the forerunner of the framework's components. The components of this framework form the basis for designing an integrated system for the preservation of cultural and natural history, and form the basis for developing and implementing a portfolio of applications using artificial intelligence, which is also the outcome of this research.

Topic: Computer Science and Information Technology

PAPER ID: 1570824014

Comparative Study of Classification Algorithms for Website Phishing Detection on Multiple Datasets

Wendy Sarasjati (Dian Nuswantoro University, Indonesia); Supriadi Rustad (Universitas Dian Nuswantoro, Indonesia); Purwanto Purwanto (Universitas Dian Nuswantoro, Indonesia); Heru Agus Santoso (Dian Nuswantoro University, Indonesia); Muljono Muljono (Dian Nuswantoro University, Indonesia); Abdul Syukur (Dian Nuswantoro University, Indonesia); Fauzi Adi Adi Rafrastara (Universitas Dian Nuswantoro, Indonesia); De Rosal Ignatius Moses Setiadi (Dian Nuswantoro University, Indonesia)

Abstract – Phishing has become a prominent method of data theft among hackers, and it continues to develop. In recent years, many strategies have been developed to identify phishing website attempts using machine learning particularly. However, the algorithms and classification criteria that have been used are highly different from the real issues and need to be compared. This paper provides a detailed comparison and evaluation of the performance of several machine learning algorithms across multiple datasets. Two phishing website datasets were used for the experiments: the Phishing Websites Dataset from UCI (2016) and the Phishing Websites Dataset from Mendeley (2018). Because these datasets include different types of class labels, the comparison algorithms can be applied in a variety of situations. The tests showed that Random Forest was better than other classification methods, with an accuracy of 88.92% for the UCI dataset and 97.50% for the Mendeley dataset.

Topic: Computer Science and Information Technology

PAPER ID: 1570824069

Improving SMEs Skills in Indonesia to Support Export with E-Learning Culture Academy

Hendriansyah Hendriansyah (Universitas Dian Nuswantoro & PT. Cipta Satu Karyaindonesia Maju, Indonesia); Erika Devi Udayanti (Universitas Dian Nuswantoro, Indonesia)

Abstract – This study targets to (a) describe the internationalization approach of SMEs in the export-oriented product of Culture Academy, (b) become aware of the strengths, weaknesses, opportunities, and threats of the internationalization process of the export-oriented creative industries of SMEs, mainly in the product of Culture Academy The method used in this research is a SWOT analysis with an internal-external matrix FAS & EFAS) to four SMEs, which are 10 key informants of exporter Product of culture academy. The outcomes show that Product of culture academy has desirable strengths and opportunities to enhance its international processes. Based on interior and exterior factors, these SMEs are in a growth function (in caution condition). The appropriate internationalization method to be developed is the SO. ST, WO, and WT strategy, that is: adding online advertising and marketing networks (or different collectors), diversifying merchandise past the main product, optimizing the position of associations associated to product transport cooperation, enhancing technological know-how skills or independently studying and lobbying the authorities regarding the ease of export policies conditions.

Topic: Computer Science and Information Technology

PAPER ID: 1570824095

End-to-End Circular Economy in Onion Farming with the Application of Artificial Intelligence and Internet of Things

Pulung Nurtantio Andono (Universitas Dian Nuswantoro, Indonesia); Filmada Ocky Saputra (Universitas Dian Nuswantoro, Indonesia); Zainal Arifin Hasibuan (Dian Nuswantoro University, Indonesia); Guruh Fajar Shidik (Universitas Dian Nuswantoro, Indonesia)

Abstract – The agricultural sector in Indonesia plays an essential role in economic development and food security in Indonesia, with an average contribution of 13.5% to Gross Domestic Product (GDP). One of the strategic agricultural commodities in daily needs is onions. Agriculture in Indonesia has not been able to produce onions that allow the fulfillment of fluctuations in people's consumption needs. Onion production is sometimes abundant so it is wasted and makes prices fall. On the other hand, there are times when the availability of onions in the community is deficient, so the price becomes very high. It is possible to solve this by building a system that can integrate all the nodes involved in supply chain management (SCM) and customer relationship management (CRM). Furthermore, this will create a balance between supply and demand, and revive the various micro, small and medium enterprises (MSME) involved in the value chain. The demand is quite significant, forcing Indonesia to still require imports of several agricultural commodities the community needs in their daily lives. However, this is one of the factors related to competitiveness with local farmers' yields and unstable onion prices. This is an early study about on how to model the optimization end-to-end value chain of onions. Optimizing the agricultural cycle in Indonesia, such as optimizing agricultural land, harvest cycles, supply and demand for crops, storage and delivery of crops, and determining commodity prices can improve food security in Indonesia.

Topic: E-commputing Technologies

PAPER ID: 1570824210

Systematic Review of Educational Data Mining for Student Performance Prediction using Bibliometric Network Analysis (SeBriNA)

Eni Hermaliani (Universitas Nusa Mandiri, Indonesia); Ahmad Zainul Fanani (Universitas Dian Nuswantoro, Indonesia); Heru Agus Santoso (Dian Nuswantoro University, Indonesia); Affandy Affandy (Universitas Dian Nuswantoro, Indonesia); Purwanto Purwanto (Universitas Dian Nuswantoro, Indonesia); Muljono Muljono (Dian Nuswantoro University, Indonesia); Abdul Syukur (Dian Nuswantoro University, Indonesia); De Rosal Ignatius Moses Setiadi (Dian Nuswantoro University, Indonesia); Fauzi Adi Adi Rafrastara (Universitas Dian Nuswantoro, Indonesia)

Abstract – Data mining has emerged as a way of working with large amounts of data in various fields of technology that produce data types quickly and correctly. In particular, for student performance prediction, innovative technologies such as data mining (DM), machine learning (ML), and big data are being used. This paper uses bibliometrics to give a full picture of the studies that have been done on how DM technologies are used in Educational Data Mining (EDM). The goal of the study is to find out which DM techniques are most often used to predict student performance and how the field of DM for education to predict student performance has changed over time. To investigate the topic, we used both qualitative and quantitative methods. To find relevant articles published in scientific journals, we used the Scopus database. This study includes 130 articles published between 2015 and 2021. We used the bibliometrix library and biblioshiny features for the bibliometric analysis. Our findings show that a variety of EDM technologies are used at each stage of student performance prediction. Several supervised ML algorithms are used for prediction. The bibliometric analysis shows that EDM for predicting student performance is a field of science that is growing quickly. Scientists from all over the world are keen to conduct research and collaborate in this interdisciplinary scientific field.

Topic: Computer Science and Information Technology

PAPER ID: 1570824372

Comparison Of Clustering Methods For Health Clinic Products

Oki Derajat Sudarmojo (Universitas Dian Nuswantoro, Indonesia); Purwanto Purwanto (Universitas Dian Nuswantoro, Indonesia); Moch. Soeleman (Universitas Dian Nuswantoro, Indonesia)

Abstract – Clinics are health service facilities for the community that provide medical services, but sometimes there are some clinics that do not have the stock of goods needed by the community. This is because the inventory management system does not always update the stock of goods that are empty or piled up. The problem is certainly detrimental to the clinic and the community. Because this is done optimization on the stock of goods. One way to group goods is to use the clustering method. In this study, the author will compare the X-Means Algorithm, K-Means Algorithm and K-Medoids Algorithm, to compare which algorithm is more optimal in grouping stock items at Clinic. From the results obtained using 3 clusters, the X-Means Algorithm has the smallest DBI value of 0.075. So that we can conclude that the X-Means algorithm is more optimal than the K-Means algorithm and the K-Medoids algorithm.

Keywords-K-Means, X-Means, K-Medoids, Clustering

Topic: Computer Science and Information Technology

PAPER ID: 1570824440

Cholesterol Detection Through Iris Using Daugman and Gray Level Co-occurrence Matrix Based on K-Means Clustering

Neza Aemal Fadilla (Dian Nuswantoro University, Indonesia); Mohamad Lathif Puja Sakti (Dian Nuswantoro University, Indonesia); Naufal Zhafran (Dian Nuswantoro University, Indonesia); Nita Setyaningsih (Dian Nuswantoro University, Indonesia); Nukat Alvian Ideastari (Dian Nuswantoro University, Indonesia); Viki Arri Shelomita (Dian Nuswantoro University, Indonesia); Taufik Aulia Pramudyawardhana (Dian Nuswantoro University, Indonesia); Christy Atika Sari (Dian Nuswantoro University, Indonesia); Eko Hari Rachmawanto (Dian Nuswantoro University, Indonesia); Amiq Fahmi (Dian Nuswantoro University, Indonesia)

Abstract – Iridology is a technique of disease and weakness in the body based on the shape and structure of the iris (the area around the pupil). The Iridology analysis is often performed manually by an iridology practice or by an experienced person. someone normal or tall using artificial network training and input data using the Gray Level Co-Occurrence Matrix (GLCM) texture comparison method, the image is input with a size of 275x275 pixels which is entered into the program for the preprocessing stage. grayscale, noise removal, image contrast, polar image exposure, and image cropping. And from the results of preprocessing, the average value of statistical data is calculated using the GLCM method. After that perform K-Means for iris cholesterol detection. Based on the results of testing the training data the percentage of program accuracy is 96.67% and for image test data the percentage of accuracy is 100%.

Topic: Computer Science and Information Technology

PAPER ID: 1570824528

Super Encryption Video Cryptography: Combination of Vigenere Cipher and Myszkowski Transposition

Raihan Yusuf (Dian Nuswantoro University, Indonesia); Muhammad Hilmi (Dian Nuswantoro University, Indonesia); Safira Hasna Setiyani (Dian Nuswantoro University, Indonesia); Vira Wahyuni Idhayanti (Dian Nuswantoro University, Indonesia); Ali Muksin (Dian Nuswantoro University, Indonesia); Christy Atika Sari (Dian Nuswantoro University, Indonesia); Eko Hari Rachmawanto (Dian Nuswantoro University, Indonesia); Heru Lestiawan (Dian Nuswantoro University, Indonesia)

Abstract – Security and confidentiality is one of the most important aspects of a system of messages, data and information. The problem is still lacking attention from designers and managers of information systems so that security issues are in the last section after the display. the science that learns about ways to secure data or messages known as Cryptography terms, while in cryptographic steps it is called cryptographic algorithm. Based on the key used, the cryptographic algorithm can be divided into two, namely symmetric algorithms and asymmetric algorithms. Where the symmetric algorithm uses one key for the encryption process and the description. While the asymmetric algorithm uses two different keys for the encryption and decryption process, namely the public key used for the encryption process, namely changing the original text data (plain text) to non-secret cipher text and private key) used for the decryption process, namely retrieval of secret text data (ciphertext) becomes the original text (plain text) which is confidential and each parties have different private keys. Cryptography is a method used to protect the confidentiality of data. In super encryption, two or more encryption algorithms are combined to make it more secure. In this work Vigenere Cipher and Myszkowsi Transposition are combined to form a super encryption. Vigenere cipher is a technique of encoding messages with Caesar cipher using the characters in the key used. The key used in this algorithm is a symmetric key and the characters in the key will be used repeatedly if all the characters in the message have not been processed while the Myszkowski Transposition is a type of cipher transposition algorithm that has its own uniqueness The specialty of this algorithm is that it has the need for keywords with identically numbered repeated letters. The key used in this algorithm is in the form of words or letters that are converted into a sequence of numbers. The alphabetical arrangement of the letters in the keyword determines the numbers. The first letter in the alphabetical order will be the number 1, the second letter in the alphabetical order will be 2, and so on. The super encryption is expected to be both easy-to-implement and more secure. The data integrity is still guaranteed because the two algorithms work together to secure the data and enable its return to plaintext.

Topic: Computer Science and Information Technology

PAPER ID: 1570824561

Landsat Image Classification Based on K-Nearest Neighbor

Raynaldi Bismantaka Barito (Dian Nuswantoro University, Indonesia), Muhammad Hafidh Sanjaya (Dian Nuswantoro University, Indonesia), Fajar Muhammad Arif (Dian Nuswantoro University, Indonesia), Naufal Humam (Dian Nuswantoro University, Indonesia), Pri Nugroho Aji (Dian Nuswantoro University, Indonesia), Christy Atika Sari (Dian Nuswantoro University, Indonesia), Eko Hari Rachmawanto (Dian Nuswantoro University, Indonesia), Suprayogi Suprayogi (Dian Nuswantoro University, Indonesia)

Abstract – Classification is the process of grouping classes and defining a class and determining the relationship between these classes, Landsat images are classified using the KNN (k-nearest neighbor) method where the Landsat image has calculated the value of the contrast, homogeneity, entropy, energy, and correlation features using the GLCM (Gray Level Co-occurrence Matrix) and with the RGB Image method by calculating the value of the RGB which will be classified between the dominance of paddy fields or the dominance of residential land. The dataset used in this study was obtained from the Google Earth Landsat Image application. The results showed that the highest accuracy was obtained using the GLCM method, which was 100%, while the accuracy of RGB image itself was 83.33%.

Topic: Computer Science and Information Technology

PAPER ID: 1570824594

Long Short-Term Memory Algorithm for Stock Price Prediction

Candra Irawan (Dian Nuswantoro University, Indonesia); Eko Hari Rachmawanto (Dian Nuswantoro University, Indonesia); Christy Atika Sari (Dian Nuswantoro University, Indonesia); Amiq Fahmi (Dian Nuswantoro University, Indonesia); Ifan Rizqa (Dian Nuswantoro University, Indonesia)

Abstract – Stock prices in the capital market fluctuate from time to time, many factors influence it. Investors need to do an accurate analysis to reduce the risk of investing, one of which is by predicting stock prices. The results of the predictions help investors to make decisions. The right decision requires accurate prediction results. So it is necessary to predict stock prices so that investors can understand investment prospects in the future. In this study, the LSTM algorithm will be used. The LSTM algorithm can extract information from long-term, time series or sequential data. The resulting MAPE value of 2.2% of these results is in the very good category because it is less than 10% and the resulting R2 of 0.974 is close to the value of 1. So that stock predictions using LSTM are included in the category of very good stock prediction models. Produce optimal stock predictions on the comparison of training data and testing data of 70:30 with 500 epochs and 64 batch sizes.

Topic: Computer Science and Information Technology

PAPER ID: 1570824673

Comparison of Acoustic Characteristic among Electronic, Human-Played and Robot-Played Demung

Sendi Novianto (Universitas Dian Nuswantoro (UDINUS), Indonesia); Pulung Nurtantio Andono (Dian Nuswantoro, Indonesia); Cinantya Paramita (Universitas Dian Nuswantoro, Indonesia); Lisdi Inu Kencana (Universitas Dian Nuswantoro, Indonesia); Fauzi Adi Adi Rafrastara (Universitas Dian Nuswantoro, Indonesia)

Abstract – Demung is a part of javanese gamelan and considered as a xylophone-type instrument. It has thick and heavy keys mounted on a low, wooden frame. Many research studies about demung and its combination with technology. This research aims to analyze the sound frequency of electric demung and original demung which played by human and robot.

Topic: Electrical and Electronic Technology

PAPER ID: 1570824687

Mask Detection Using Convolutional Neural Network

Abdussalam Abdussalam (Universitas Dian Nuswantoro, Indonesia); Elkaf Pramudya (Universitas Dian Nuswantoro, Indonesia); Oki Setiono (Dian Nuswantoro University, Indonesia); Muslih Muslih (Dian Nuswantoro, Indonesia)

Abstract – COVID-19 virus has hit Indonesia since early March 2020. One of the government's efforts to prevent the spread of COVID-19 is to do physical distancing to require people to wear masks when doing activities outside the home. One way to overcome this problem is by detecting mask users to be more obedient and obedient to the rules, then the identification process is carried out for mask users and those who do not use masks. The process is carried out using the Convolutional Neural Network method. CNN is known to be superior and does not require pre-processing so it saves more time. In terms of algorithmic competence, CNN is considered capable of carrying out the data detection process well. Of the 1376 datasets used, 30 epochs, accuracy = 0.988, recall = 0.990, precision = 0.987, and F1 = 0.988 with the required detection time for each image between 4 to 5 seconds.

Topic: Computer Science and Information Technology

AUTHOR INDEX

G

H

I

J

K

L

M

N

O

P

R

S

T

U

V

W

X

Y

Z