**The 3rd International Conference on Computer Science and Computational Intelligence 2018
(ICCSCI 2018)
Alam Sutera, 7-8 September 2018**

Empowering Smart Technology in Digital Era for a Better Life

**School of Computer Science
Bina Nusantara University
2018**

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The 3rd International Conference on Computer Science and Computational Intelligence 2018

Preface

Widodo Budiharto[a], Alexander A S Gunawan[b], Lili Ayu Wulandhari[a], Williem[a], Faisal[b], Rhio Sutoyo[a], Meiliana[a], Dewi Suryani[a], Yulyani Arifin[a]

[a] Computer Science Department, School of Computer Science, Bina Nusantara University, Jakarta, Indonesia 11480
[b] Mathematics Department, School of Computer Science, Bina Nusantara University, Jakarta, Indonesia 11480

The 3rd International Conference on Computer Science and Computational Intelligence (ICCSCI 2018) is annual forum for researchers, engineers and scientist to disseminate their knowledge and research on Computer Science, Computational Intelligence and Information Technology. We are pleased to announce the theme of the ICCSCI 2018 is: 'Empowering Smart Technology in Digital Era for a Better Life'. The conference warmly welcomes prospected authors to submit their research and idea to ICCSCI 2018 and share the valuable experiences with the scientist and scholars around the world.

ICCSCI 2018 received 186 manuscripts from thirteen countries, namely Indonesia, Malaysia, Thailand, United Arab Emirates, Egypt, Philippine, Sri Lanka, Mexico, Morocco, Saudi Arabia, Russia, Australia and India. After careful review process of 186 manuscripts, 87 manuscripts were accepted or approximately 46% rate of acceptance. These manuscripts are divided into seven tracks:
1. Intelligent System and Machine Vision
2. Software Engineering, Information Security and Networks
3. Big Data and Information Technology
4. Foundations of Computing and Theoretical Computer Science
5. Computational Linguistic and Audio Processing
6. Internet of Thing and Robotics
7. Multimedia, Game Development and Virtual Reality

We would like to appreciate all participants, keynote speakers, reviewers and committee for the contributions to the conference program and proceeding. We would like to express our gratitude to the reviewers for the valuable review and suggestion, so that we can maintain the quality of this proceeding very well. This conference is held in success collaboration between Program committee and Technical committee. We would like to thank Elsevier for supporting publication of this conference proceeding.

We are looking forward for the next event in computer science and computational intelligence in the future.

The 3rd International Conference on Computer Science and Computational Intelligence 2018

Keynote Speaker I

Machine Learning and Deep Learning approaches for Retinal Disease Diagnosis

Prof. Dr. Fabrice Meriaudeau[a,b]

[a] Burgundy University, Le2i – Laboratoire Electronique, Informatique et Image, France
[b] Universiti Teknologi PETRONAS, Director of Institute of Health and Analytics, Malaysia

Abstract

Diabetic retinopathy, Age-related macular degeneration as well as glaucoma are the main retinal diseases. Suffering from these can lead to blindness and their progression in developed and developing countries raises high concerns. Therefore, effective and early diagnosis and treatment are highly desired. Currently, retinal medical imaging is one of the main diagnostic means for eye diseases. This talk will address the latest Computer Aided Diagnosis techniques applied to spectral-domain optical coherence tomography (SD-OCT) as well as Fundus Images. It will cover the basis of preprocessing to machine learning with approaches based on Bag of Features, Bag of Word, Feature reduction, as well as the latest Deep Learning architectures either used for segmentation (vessels) or classification.

3rd International Conference on Computer Science and Computational Intelligence 2018

Keynote Speaker II

Practical AI from Strategy to Execution

On Lee [a,b,c]

[a] *CEO & CTO of GDP Labs*
[c] *CTO of GDP Venture*

Abstract

After a few decades of "AI Winter" – a quiet period without any significant progress – AI has made a comeback due to a series of breakthroughs in Deep Learning algorithms; particularly in NLP, Speech & Computer Vision technologies in recent years. However, it has to take a concerted effort from 3 major institutions — Government, Academia and Industry — in order for AI to benefit billions of people globally like the internet and mobile computing do today. Not a day goes by without people talking about AI on the internet, magazines, radio, TV, conferences, etc. for the past few years. However, most of them just talk at the ten-thousand-foot views. Even worse, many AI projects fail miserably. Why? Because AI is hard and expensive to implement due to lack of expertise. This talk will focus on the industry perspective, from idea to strategy to execution. We will share GDP Venture and GDP Labs' experience on how we built an AI expertise and AI ecosystem for our companies and the Indonesian tech industry. Also, we will discuss how academia could enable and help accelerate the growth of AI in Indonesia.

The 3rd International Conference on Computer Science and Computational Intelligence 2018

Keynote Speaker III

Scalable Video Analytics using Capsule Networks for Big Video Data

Dr Eng. M. Ivan Fanany[a]

[a] *Head of Machine Learning and Computer Vision Lab, University of Indonesia*

Abstract

Capsule Networks is one of the hottest topics in the current deep learning community. Its revolutionary architecture and algorithms based on capsules representation and routing by agreement provide a new and deep insight on how actually the current deep learning that is based on routing by max pooling has been a success but also a big flaw. In this talk, a solid understanding of the architecture, algorithms, and the intuition behind its works will be presented and discussed. Especially on how to deal with big video data and benefiting from the capsule networks for video analytics. How to make its learning more scalable for training it distributedly on multiple machines with multiple GPUs both using remote procedure calls, stream processing, and hadoop is also addressed. A showcase on action recognition using capsule networks from big video video data (UCF-101) will also be presented.

The 3rd International Conference on Computer Science and Computational Intelligence 2018, ICCSCI 2018
7-8 September 2018 , BINUS Alam Sutra , Tangerang, Indonesia
Program Schedule

Day 1	Friday, 07 September 2018	
Time	**Activity**	**Room**
07.30 - 08.30	Registration	Auditorium, B0501
08.30 - 09.00	Opening *Speech from General Chair of ICCSCI 2018: **Dr. Alexander A. S. Gunawan** * Speech from General Editor of ICCSCI 2018 **Prof. Dr. Widodo Budiharto** * Speech from Vice Rector Research & Technology Transfer : **Prof. Dr. Tirta Nugraha Mursitama, Ph.D.**	Auditorium, B0501
09.00-09.30	Coffee Break	Hallway of Auditorium
09.30 - 10.30	Keynote speaker 1: **Prof. Dr. Fabrice Meriaudeau**	Auditorium, B0501
10.30-11.30	Keynote speaker 2: **Mr. On Lee** CEO & CTO at GDP Labs and CTO of GDP Venture.	Auditorium, B0501
11.30 - 13.30	Lunch and Prayer	Hallway of Level 3 Section C, Musholla
13.30 - 15.00	Paralel Session 1	C0302, C0303, C0304,C0305,C0306
15.00 - 15.30	Coffee Break	Hallway of Level 3 Section C
15.30 - 17.00	Paralel Session 2	C0302, C0303, C0304,C0305,C0306
Day 2	Saturday, 08 September 2018	
Time	**Activity**	**Room**
08.00 - 09.00	Registration	
09.00 - 10.00	Keynote Speaker 3: **Dr. Eng. M. Ivan Fanany**	Hall, B0301
10.00 - 10.30	Coffee Break	Hallway of Level 3 Section C
10.30 - 12.00	Paralel Session 3	C0302, C0303, C0304,C0305,C0306
12.00 - 13.00	Lunch and Prayer	Hallway of Level 3 Section C, Musholla
13.00 - 15.00	Parelel Session 4	C0302, C0303, C0304,C0305,C0306
15.00 - 16.00	Coffee Break	Hallway of Level 3 Section C
16.00-17.00	Closing Ceremony Speech from Dean of School of Computer Science **Fredy Purnomo, S.Kom., M.Kom**	Hall, B0301
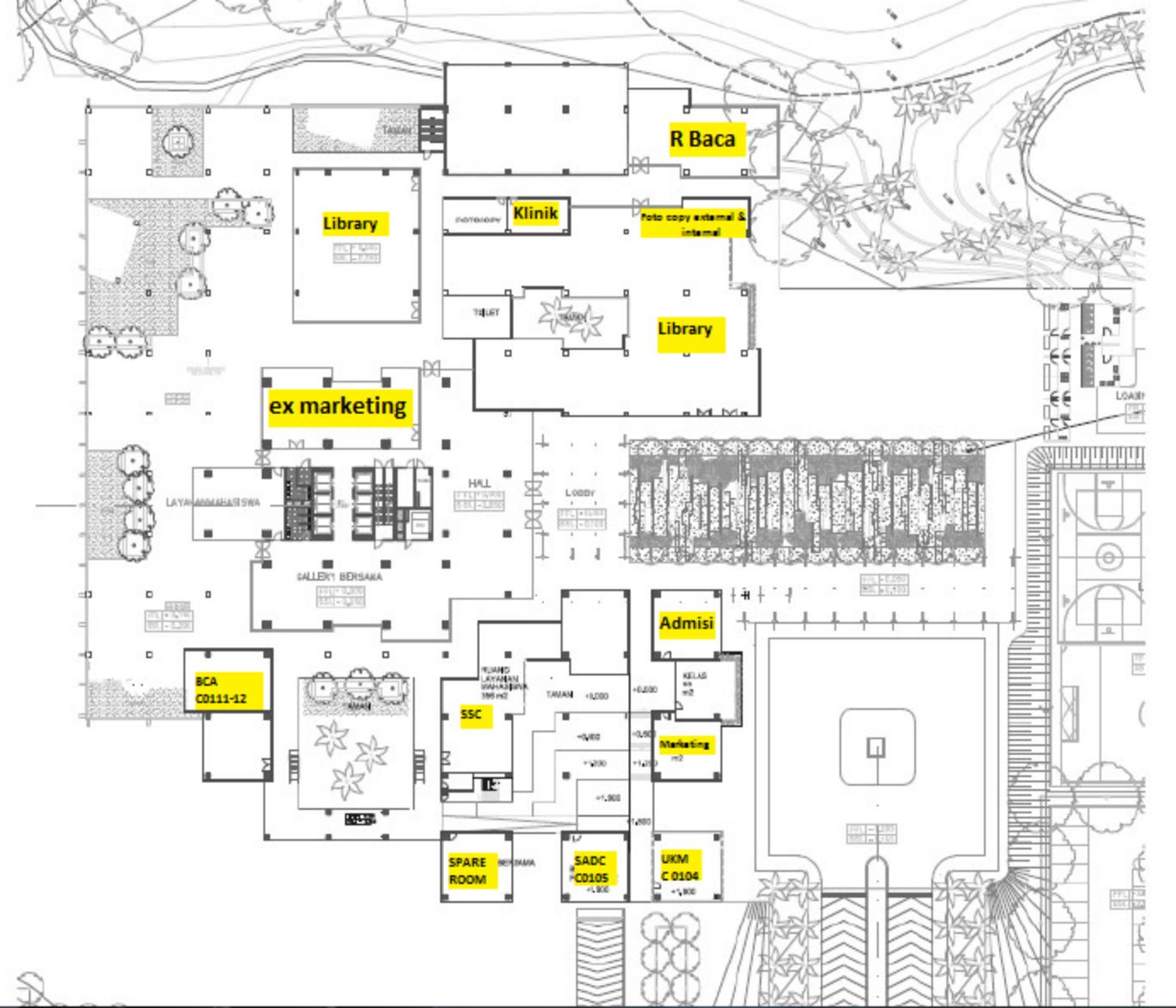
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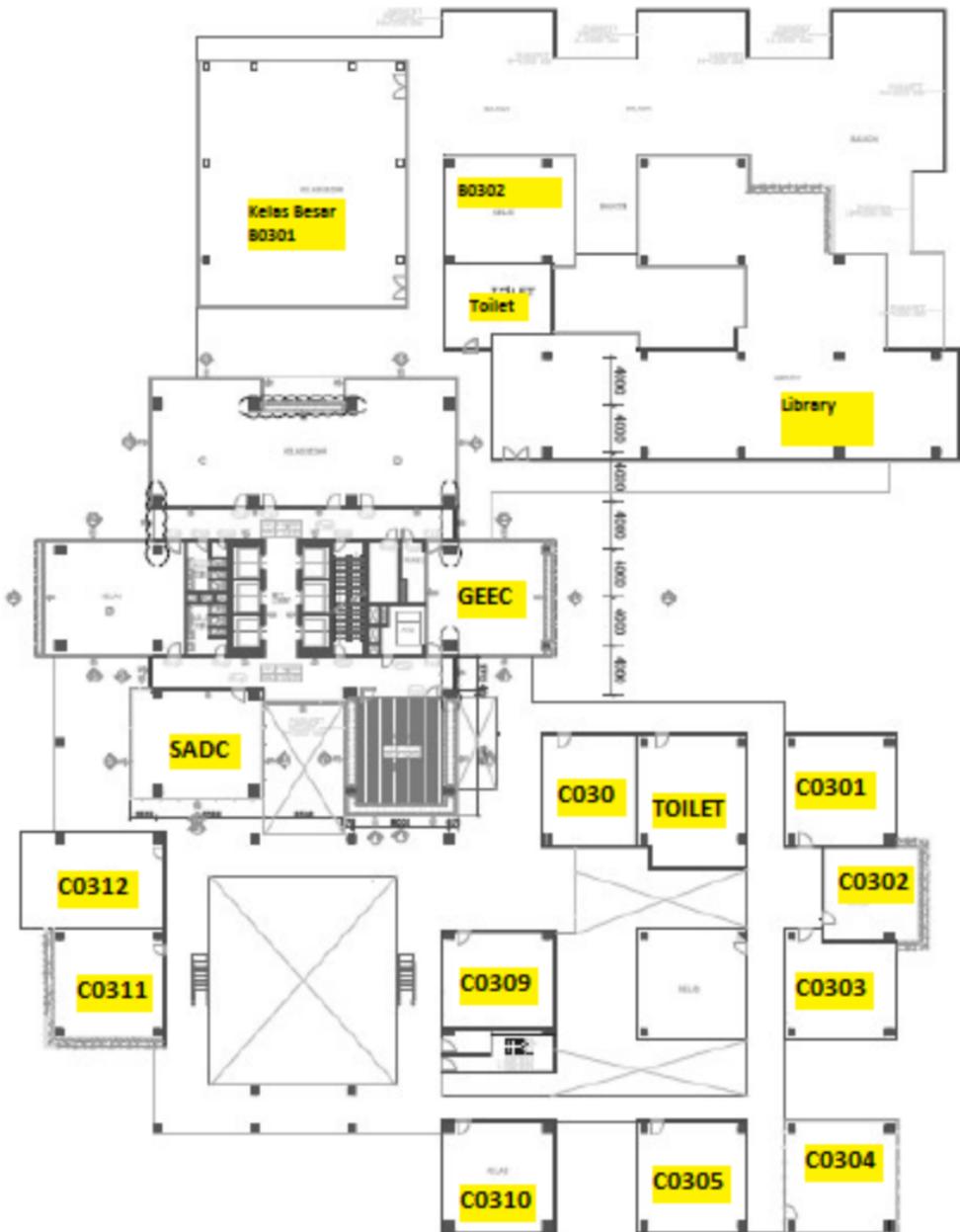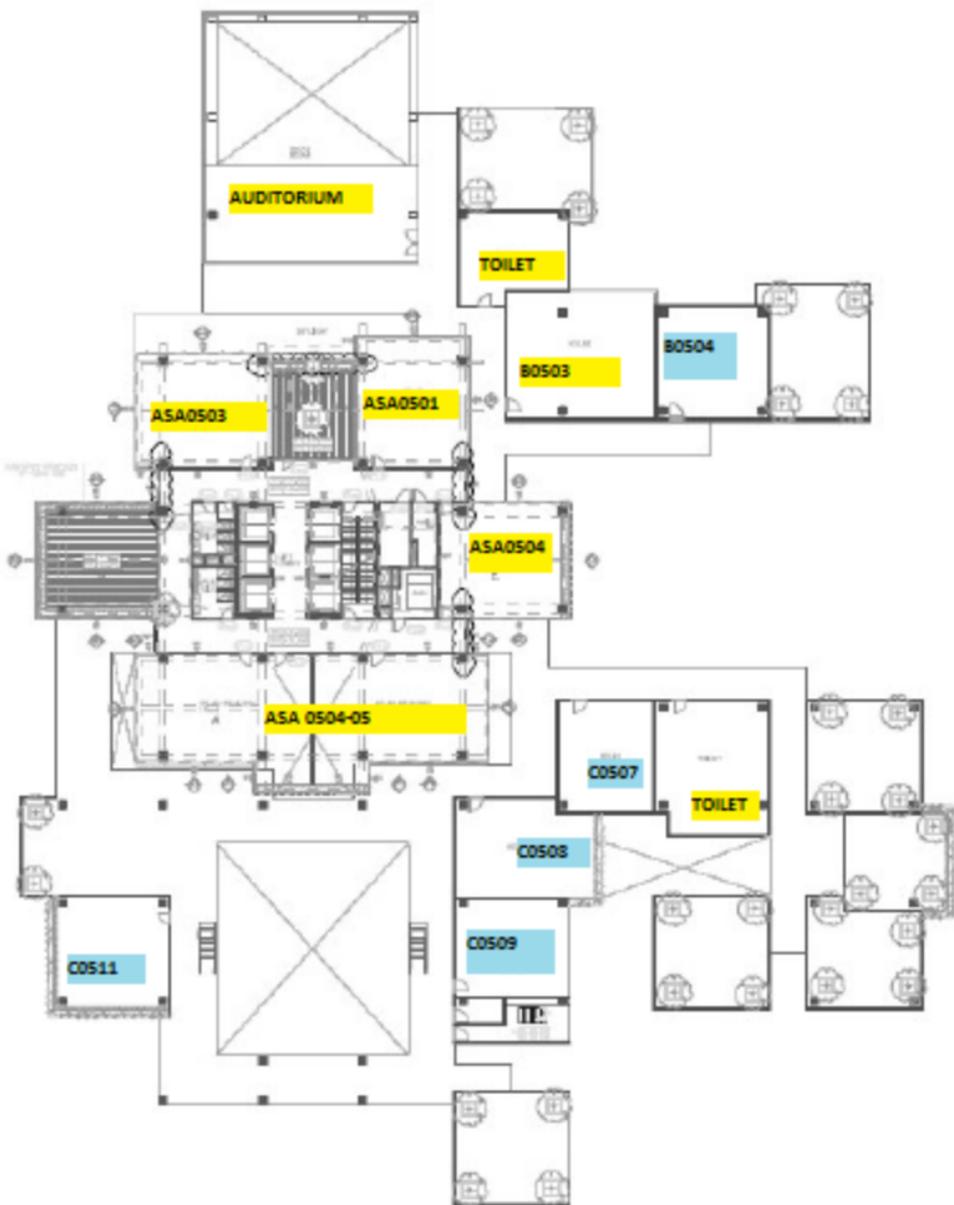
Parallel Session 1

Room	C0302
Time	13.30 - 15.00
Chairman	Williem, Ph.D.

ID	Presenter	Author	Title
553	Suharjito	Rinda Parama Satya Hermanto, Suharjito , Diana, Ariadi Nugroho	Waiting-Time Estimation in Bank Customer Queues using RPROP Neural Networks
557	Tjeng Wawan Cenggoro	Fanny, Tjeng Wawan Cenggoro	Deep Learning for Imbalance Data Classification using Class Expert Generative Adversarial Network
592	Earl Ryan M. Aleluya	Earl Ryan M. Aleluya; Celesamae T. Vicente	Faceture ID: face and hand gesture multi-factor authentication using deep learning
611	Wichai Puarungroj	Wichai Puarungroj, Narong Boonsirisumpun	Thai License Plate Recognition Based on Deep Learning

ID: 553

Waiting-Time Estimation in Bank Customer Queues using RPROP Neural Networks

Rinda Parama Satya Hermanto (a), Suharjito (a), Diana (b), Ariadi Nugroho (a)

(a) Computer Science Department, BINUS Graduate Program- Master of Computer Science, Bina Nusantara University, Jakarta, Indonesia 11480
(b) Computer Science Department, School of Computer Science, Bina Nusantara University, Jakarta, Indonesia 11480

Abstract

In daily banking customer queues, unknown waiting-time could lower customer experience. Little's Law formula in Queue Theory provides a generic formula for waiting-time, but it cannot be implemented directly to give finite wait-time estimation in real-life. This study aims to investigate predictive variables that explain waiting-time duration. This paper uses Fast Artificial Neural Network engine to implement Artificial Neural Networks method. To train Artificial Neural Networks, Resilient Propagation was used. Time-series approach and structural approach for input neuron was compared. Average duration from previous interval and number of server was proposed to increase structural variable like Queue Length and Head of Line Duration estimator variable. To determine the best configuration for number of neuron in input and hidden layer, experimental method was used. The results of this study show that structural approach provides better estimation than time-series approach. Furthermore, modified helper variable combination provides a more refined result.

ID : 557

Deep Learning for Imbalance Data Classification using Class Expert Generative Adversarial Network

Fanny (a), Tjeng Wawan Cenggoro (a,b)

(a) Computer Science Department, School of Computer Science, Bina Nusantara University, Jakarta, Indonesia 11480
(b) Bioinformatics and Data Science Research Center, Bina Nusantara University, Jakarta, Indonesia 11480

Abstract

Without any specific way for imbalance data classification, artificial intelligence algorithm cannot recognize data from minority classes easily. In general, modifying the existing algorithm by assuming that the training data is imbalanced, is the only way to handle imbalance data. However, for a normal data handling, this way mostly produces a deficient result. In this research, we propose a class expert generative adversarial network (CE-GAN) as the solution for imbalance data classification. CE-GAN is a modification in deep learning algorithm architecture that does not have an assumption that the training data is imbalance data. Moreover, CE-GAN is designed to identify more detail about the character of each class before classification step. CE-GAN has been proved in this research to give a good performance for imbalance data classification.

ID : 592

Faceture ID: face and hand gesture multi-factor authentication using deep learning

Earl Ryan M. Aleluya, Celesamae T. Vicente

Mindanao State University – Iligan Institute of Technology, 9200 Iligan City, Philippines

Abstract

Access control is the act of providing privacy to a resource, and authentication through a single factor is no longer reliable to provide robust protection against unauthorized access. Hence, there is a rapid growth of exploring novel multi-factor authentication (MFA) methods which combine two or more authentication factors– inherence, possession, and knowledge. Despite the increasing use of MFA, to the best of authors' knowledge, none have so far explored the combination of face, one-time password (OTP) and hand gesture in MFA. Thus, this study produces a proof-of-concept of this combination to form a new authentication method (Faceture ID). Furthermore, this study highlights three contributions: i) face verification with single-sample gallery set using pre-trained Deep Convolutional Neural Network, ii) handwriting gesture recognition using Leap Motion controller for tracking motion and Convolutional Neural Network for classification, and lastly, iii) a new MFA method utilizing face, OTP and hand gesture. The experimental results on the face verification show an average false acceptance rate of 1.94% with average genuine acceptance rate of 67.7%, from the self-built database where the facial images are exposed to variations in pose, expression, and occlusion. In addition, the classifier for the handwriting gesture recognition can predict gestures at about 96% for both precision and recall. Furthermore, the proposed MFA provides a novel systematic approach, high accuracy and performance with the intent to contribute on strengthening the security on privacy of resources against identity theft and attacks.

ID : 611
Thai License Plate Recognition Based on Deep Learning

Wichai Puarungroj, Narong Boonsirisumpun

Computer Science Department, Faculty of Science and Technology, Loei Rajabhat University, Loei,42000, Thailand

Abstract

Recognizing vehicle's license plate is necessary because the number of vehicles is increasing and it goes beyond human's ability to complete this task. The vehicle license recognition system commonly combines 2 sub-systems: license plate detection, which aims to locate the vehicle and its license plate; and license plate recognition, which aims to recognize the characters on the plate. This research focuses on the latter part by researching into Thai motorcycle license plate. This type of plate is a triple-line type containing 3 lines of character sets, which represent category, registered place, and registered numbers respectively from top to bottom. Differently from a one-line type license plate, the research proposed an approach of two-step training and recognizing by firstly segmenting and training the 3 lines of each license plate by using deep learning (MobileNets and Inception-v3); in the second step, Thai letters and numbers on the plate were segmented and trained. The models from these trainings were deployed with the whole license plate testing. A test was carried out on LP images with varied angles of orientation and the accuracy rate of line and character recognition were 96.94% and 91.76% respectively.

Day 1
Parallel Session 1

Friday, 07 September 2018

Room   C0303
Time   13.30 - 15.00
Chairman   Dr. Jarot Suroso

ID	Presenter	Author	Title
563	Abba Suganda Girsang	Fajar Ciputra Daeng Bani, Suharjito, Diana, Abba Suganda Girsang	Implementation of Database Massively Parallel Processing System to Build Scalability on Process Data Warehouse
665	Rezzy Eko Caraka	Rezzy Eko Caraka, Isma Dwi Kurniawan, Riki Herliansyah, Arif Budiarto, Shinta Purnamasari, Bens Pardamean	Ecological Show Cave and Wild Cave: Negative Binomial Gllvm's Arthropod Community Modelling
660	Dr. Manohara Pai M M	Girija Attigeri, Manohara Pai M M, Radhika M Pai, Rahul Kulkarni	Knowledge Base Ontology Building For Fraud Detection Using Topic Modeling
811	Earl Von Lapura	Earl Von F. Lapura, John Kenneth J. Fernandez, Mark Jonathan K. Pagatpat, Dante D. Dinawanao	Development of a University Financial Data Warehouse and its Visualization Tool

ID : 563

Implementation of Database Massively Parallel Processing System to Build Scalability on Process Data Warehouse

Fajar Ciputra Daeng Bani[a], Suharjito[a], Diana[b], Abba Suganda Girsang[a]

[a]Computer Science Department, BINUS Graduate Program- Master of Computer Science, Bina Nusantara University, Jakarta, Indonesia 11480
[b]Computer Science Department, School of Computer Science, Bina Nusantara University, Jakarta, Indonesia 11480

Abstract
The problem with telecommunications companies today is that transactional data is more extensive than existing source tables. This makes business reporting less efficient and overwhelms query processing results in data warehouses so that they do not meet business requirements. The fast and complex evolution of the digital world must be scalable to the data warehouse process, so that the authors implement it in the data warehouse using massive parallel processing (MPP) with the Greenplum database, so that business users can get reports faster and more optimally. This case study explains how the MPP system implements and measures the performance of the Greenplum database by performing complex queries in the data warehouse with parallel processing. Therefore, this case study analyzes whether the use of MPP systems can measure the scalability of throughput and the response time in the data warehouse so that system performance in the Greenplum database remains stable for daily, weekly, and monthly operations.

Ecological Show Cave and Wild Cave: Negative Binomial Gllvm's Arthropod Community Modelling

Rezzy Eko Caraka[ab], Isma Dwi Kurniawan[c], Riki Herliansyah[d], Arif Budiartoa[e], Shinta Purnama Sari[a] ,Bens Pardamean[af]

[a]Bioinformatics and Data Science Research Center, Bina Nusantara University
[b]Department of Statistics, Padjadjaran University, Indonesia
[c]Department of Biology, UIN Sunan Gunung Djati, Bandung
[d]Department of Mathematics, Kalimantan Institute of Technology (ITK), Kalimantan
[e]Computer Science Department, School of Computer Science, Bina Nusantara University,Jakarta, Indonesia 11480
[f]Computer Science Department, BINUS Graduate Program – Master of Computer Science Bina Nusantara University, Jakarta, Indonesia, 11480

Abstract
Ecology is a branch of biology that studies the interaction and relationship between organisms and their environment. Abundance, distribution of organisms and patterns of biodiversity are great interests for many ecologists. One of interesting ecosystems to be studied is a cave. A cave has a typical environment character with a vulnerable ecosystem. Many caves in Indonesia, particularly in Gunungsewu karst area have been developed into tourist objects (show caves) and managed imprudently. Such cave management has potential to harm the environment and leads to ecosystem destruction. Arthropods are the most abundance fauna in cave that play critical roles in maintaining cave ecosystems equilibrium. In the heart of statistical ecology, we need to analyze the differences on Arthropods community and abiotic (climatic-edaphic) parameters among show caves and wild caves. Statistical techniques are needed for the extraction of such information. GLLVM is one method that is able to explain spatial-based information and is particularly suitable for ecology. In this paper, we use negative binomial models to see the differences on spatial patterns of predator and decomposer Arthropods, also characteristic of edaphic and climatic in each cave.

Knowledge Base Ontology Building for Fraud Detection Using Topic Modeling

Girija Attigeri, Manohara Pai M M[*] , Radhika M Pai, Rahul Kulkarni

Manipal Institute of Technology, Manipal Academy of Higher Education, Manipal, India

Abstract
Moving towards the digitization and cashless economy tests the existing IT infrastructure for security and fraud controls substantially. Transition from traditional to cashless economy requires to banks to have more secure system to fight fraud. To understand and transform the needs for more secure banking system it is necessary to understand the domain of fraud and create knowledge base for fraud. It helps bridge the gap between business level and IT levels of banking. So that anti-fraud regulations could be automatically imbied in the system. Hence the paper focuses on analyzing existing fraud case documentations and understand the significant terms involved in the fraud. For this TF-IDF weighting, topic modeling with LDA is used for identifying the group of words (topic) representing particular type of fraud. Using these knowledge

base ontology is extracted which can be used for building fraud detection system. Experiment is performed on extracted fraud documents and ontology is built using the latent topics identified.

ID : 811
Development of a University Financial Data Warehouse and Its Visualization Tool

Earl Von F. Lapura[a*], John Kenneth J. Fernandez[a], Mark Jonathan K. Pagatpat[a], Dante D. Dinawanao[b]

[a]School of Computer Studies, MSU – Iligan Institute of Technology, Andres Bonifacio Avenue, Tibanga, 9200 Iligan City, Philippines
[b]Information and Communication Technology Center, MSU – Iligan Institute of Technology, Andres Bonifacio Avenue, Tibanga, 9200 Iligan City, Philippines

Abstract
In today's data-driven world, organizations which make use of the transactional data they have accumulated over time to come up with a more realistic picture of their operations can make more informed decisions towards attaining their goals and interests. However, due to the huge volumes of these accumulated transactional data, they cannot just be easily and readily used for reporting and analysis purposes. With this, a data warehouse is needed to store these accumulated data obtained from different sources within an organization where other decision-support applications can be built on to guide management decisions. In this study, a financial data warehouse was developed with a multidimensional construct that splits time, finance unit, account, and time dimensions, which is updated periodically with the accumulated transactional data sourced from a financial database of a university, and accessible via a Representational State Transfer application programming interface (REST API). To demonstrate the API's functionalities, we have created a data visualization tool which we integrated into our university web portal and subjected it to usability testing by its target end-users. It was shown that most of the respondents find the tool useful. Also, a query performance test was conducted comparing the execution of certain queries on the source transactional database and on the data warehouse. Result showed that the query time was greatly reduced by an average of over 50% when these queries were executed on the latter.

ID	Presenter	Author	Title
554	Benfano Soewito	Rizal Ansyori, Nanik Qodarsih, Benfano Soewito	A systematic literature review: Critical Success Factors of Enterprise Architecture Implementation
570	Viska Noviantri	Viska Noviantri, Ivana Dominica, Suharjito Suharjito	Temperature Distribution Based on Roof Shapes using Ghost Point Method
568	Afan Galih Salman	Afan Galih Salman	Single Layer & Multi-layer Long Short-Term Memory (LSTM) Model with Intermediate Variables for Weather Forecasting
636	Ro'fah Nur Rachmawati	Ro'fah Nur Rachmawati	Spatio-Temporal Poverty Analysis with INLA in Hierarchical Bayes Ecological Regression

ID : 554

A systematic literature review: Critical Success Factors to Implement Enterprise Architecture

Rizal Ansyori[1], Nanik Qodarsih[2], Benfano Soewito[3]

[1,3]Computer Science Department, BINUS Graduate Program – Master of Computer Science, Bina Nusantara University, Jakarta, Indonesia 11480
[2]Badan Litbang Diklat Kumdil MA RI, Jalan Cikopo Selatan, Mega Mendung, Bogor, Indonesia

Abstract
Enterprise Architecture (EA) has been receiving growing attention from organizations. Most organizations still face problems in EA implementation, EA Development is not an easy task. Since risk of failed EA implementation might occur, organization needs to know the Critical Success Factors (CSF) to implementation EA in organization especially in public sectors agency. This study provided a review of the extent literature (2007-2017) on framework that used to EA implementation and identify the CSF that affect to implement EA in public sectors agency. This Systematic Literature Review (SLR) establish a synthesis analysis based on the research model using PRISMA checklist. The final list of selected primary studies for the first stage had 16 primary studies. Then, the full texts of 16 primary studies were analyzed. Then from that, performed the synthesis to produce Enterprise Architecture framework and factors that affect enterprise architecture implementation. Base on summarize, can be conclude that the most commonly used framework in this literature study is TOGAF and The US Federal Enterprise Architecture Framework (FEAF), about 32% the public sectors using TOGAF framework to implementation EA, and about 25% public sectors using FEAF framework to implementation EA. According to the results of this study as many as 68% of papers say that the technical development is a CSF in the implementation of EA in public sector and about 50% of papers say that the framework and methodology is a CSF of implementation of EA in public sector.

ID : 570
Temperature Distribution Based on Roof Shapes using Ghost Point Method

Viska Noviantri[a], Ivana Dominica[a]

[a]Bina nusantara University, Jln. K.H. Syahdan, Jakarta, Indonesia

Abstract
Temperature distribution is one of many important housing property to obtain comfortable place to reside in. In Indonesia, we could see there are various types of traditional houses with different roof shapes. For examples, 'Rumah Joglo' from Java, 'Rumah Gadang' from West Sumatra, 'Rumah Tongkonan' from South Celebes, and many more. Analysis of temperature distribution for certain traditional houses with different roof shapes in Indonesia are presented in this paper. It seems interesting to analyzed since the roof of traditional houses apparently adapted in home architecture nowadays. Temperature distribution represented by steady state heat equation and solved by numerical method using finite difference method. Quadratic extrapolation toward ghost point method is also used here to accommodate the arbitrary domain problem. Temperature distributions will simulate some house with different shapes of roof and compare it. In conclusion, this paper will indicate the roof with the most comfortable temperature distribution.

ID : 568
Single Layer & Multi-layer Long Short-Term Memory (LSTM) Model with Intermediate Variables for Weather Forecasting

Afan Galih Salman (a,b), Yaya Heryadi (b), Edi Abdurahman (b), Wayan Suparta (c)

(a) Computer Science Department, School of Computer Science, Bina Nusantara University, Jakarta, Indonesia 11480.
(b) Computer Science Department, BINUS Graduate Program-Doctor of Computer Science, Bina Nusantara University, Jakarta, Indonesia 11480,
(c) Department of Electrical Engineering, Faculty of Science and Technology, Sanata Dharma University, Yogyakarta 55282,

Abstract
Weather forecasting has gained attention many researchers from various research communities due to its effect to the global human life. The emerging deep learning techniques in the last decade coupled and the wide availability of massive weather observation data have motivated many researches to explore hidden hierarchical pattern in the large volume of weather dataset for weather forecasting. The purposes of this research are to build a robust and adaptive statistical model for forecasting univariate weather variable in Indonesian airport area and to explore the effect of intermediate weather variable related to accuracy prediction using single layer Long Short Memory Model (LSTM) model and multi layers LSTM model. The proposed forecasting model is an extension of LSTM model by adding intermediate variable signal into LSTM memory block. The premise is that two highly related patterns in input dataset will rectify the input patterns so make it easier for the model to learn and recognize the pattern from the training dataset. In an effort to achieve a robust model for learning and recognizing weather pattern, this research will also explore various architectures such as single layer LSTM and Multiple Layer LSTM (4 layers LSTM). The dataset is weather variable data collected by Weather Underground at Hang Nadim Indonesia airport. This research used visibility as predicted data and temperature, pressure, humidity, dew point as intermediates data. The best model of LSTM in this experiment is multiple layers LSTM and the best intermediate data is pressure variable. Using the pressure variable this model has gained the validation accuracy 0.8060 and RMSE 0.0775.

ID : 636
Spatio-Temporal Poverty Analysis with INLA in Hierarchical Bayes Ecological Regression

Ro'fah Nur Rachmawati[a,*] , Novi Hidayat Pusponegoro[b]

[a]Statistics Department, School of Computer Science, Bina Nusantara University
[b]Statistics Department, Sekolah Tinggi Ilmu Statistik, Jl Otista No. 64C, Jakarta 13330, Indonesia

Abstract
Spatio-temporal analysis widely used to describe geo-referenced data that contain information about space and time, with many important response variables and predictors. The models are usually presented as maps to represent the spatial dependence and temporal correlation from time to time. Spatio-temporal models presented in this paper are designed with hierarchical fashion and estimated with INLA (Integrated Nested Laplace Approximation) as the current estimation method for Bayesian analysis. INLA based on latent Gaussian posterior distribution which provides great computational benefit and solve the convergence issue in MCMC (Markov Chain Monte Carlo) algorithm. We model the poverty data set using classical, dynamic and space-time interaction of spatio-temporal models, \and investigate the poverty relationship with socio-economics predictors. Using R-INLA package and deviance information criteria for models best fit selection, we conclude dynamical non-parametric is the most proper model on its ecological regressions.

Day 1   **Friday, 07 September 2018**
Paralel Session 1
Room   C0305
Time   13.30 - 15.00
Chairman   Prof. Widodo Budiharto

ID	Presenter	Author	Title
613	Earl Ryan M. Aleluya	Earl Ryan M. Aleluya; Arnel D. Zamayla; Shayne Lyle M. Tamula;	Decision-making system of soccer-playing robots using finite state machine based on skill hierarchy and path planning through Bezier polynomials
850	Alexander A S Gunawan	Alexander A S Gunawan, Pribadi R Mulyono, Widodo Budiharto	Indonesian Question Answering System for Solving Arithmetic Word Problems on Intelligent Humanoid Robot
778	Aswin Wibisurya	Sebastian Wisnusenna, Michael Sunardy Yonatan, Aswin Wibisurya , Fanny, Teguh Yuwono	Model of Web Based Application to Control Bridge Traveler Using Raspberry Pi
740	Nico Surantha	Nico Surantha	Design of Smart Home Security System using Object Recognition and PIR Sensor

ID : 613
Decision-making system of soccer-playing robots using finite state machine based on skill hierarchy and path planning through Bezier polynomials

Earl Ryan M. Aleluya*, Arnel D. Zamayla, Shayne Lyle M. Tamula
Mindanao State University – Iligan Institute of Technology, 9200 Iligan City, Philippines

Abstract
The decision-making mechanism of robotic systems is a fundamental component for the robots' autonomous control. Like soccer-playing robots, a system must be created such that the strategy is maximized to both chances of scoring and blocking, thus, obtaining a successful play. With the goal of expanding the range of practical applications for robotic systems and contributing to the progress of the design of mobile robots, this study designs a decision-making system using Finite State Machine (FSM) for the action-role selection and Bezier curvature algorithm for the path planning. The presented design follows the skill hierarchy – team strategy layer, role layer and action layer. The study limits the number of players per team to two soccer-playing robots. Each role has a different action to perform as strategized by FSM. The navigation of the robots is established by following a repeatedly modified Bezier curve. The results show that the system using FSM wins the game at 60% chance compared to a system without action planning. Moreover, the Bezier curvature algorithm is effective if both the robot is in the center area of the soccer field. However, the robot spins erroneously at locations near the edges of the soccer field.

ID : 850
Indonesian Question Answering System for Solving Arithmetic Word Problems on Intelligent Humanoid Robot

Alexander A S Gunawan [a]*, Pribadi R Mulyono [b], Widodo Budiharto [b]

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[b] Computer Science Department, School of Computer Science, Bina Nusantara University, Jakarta, Indonesia 11480

Abstract

This paper presents our research on Indonesian question answering system for solving arithmetic word problems using pattern matching approach on intelligent humanoid robot. The objective of this paper is to elaborate how natural language processing (NLP) and pattern matching approach works in question answering system for solving arithmetic word problems. Upon receiving a Indonesian arithmetic word problem, the robot will translate Indonesian speech to English text, resolve conjunction problem, co-references problem, question preprocessing, question analysis, represent the knowledge, and lastly the robot will answer the solution. We employed NLP for English by using Natural Language Toolkit (NLTK) in our research. Based on the experiment results, it can be concluded that: (i) the accuracy of the question answering system for each scheme ranges from 80% to 100% depend on the difficulty to comprehend the word problem, (ii) the response time is rather slow with average processing time is about 1.12 minutes.

ID : 778
Model of Web Based Application to Control Bridge Traveler Using Raspberry Pi

Sebastian Wisnusenna[a], Michael Sunardy Yonatan[a], Aswin Wibisurya[b]*, Fanny[a], Teguh Yuwono[c]

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[c]Struktur Pintar Indonesia, Jakarta, Indonesia 12950

Abstract

Bridge traveler is used to facilitate the construction and maintenance of a bridge which is controlled using control panel buttons, located inside the traveler. However, this method leads to some problems, like a difficulty of moving a traveler to a proper position (perspective) and an inhibition of work due to damaged control panel. In this research, a model of a web-based application to control a traveler with spans by using Raspberry Pi is developed. This research's contribution is a model of a web-based application for traveler automation in all possible movements of its components. As the results, the experiments show that the program implemented doesn't take much time and the execution of a command is done in a reasonable time. Moreover, for the safety of the bridge traveler, this program also implements a sensor that works when a component is at its most downward/inward position and detecting a blocking object in the middle of a possible movement and stops the movement immediately.

ID : 740
Design of Smart Home Security System using Object Recognition and PIR Sensor

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Abstract
This research aims to design and implement a home security system with the capability for human detection. The traditional home security system, i.e. closed-circuit television (CCTV) can only capture and record the video without able to give warning feedback if there is any suspicious object. Therefore, an additional object detection and warning method is required if there is an intruder. The proposed design is implemented using Raspberry Pi 3 and Arduino, which are connected by USB cable. The PIR sensor is installed on the Arduino and the webcam is mounted on Raspberry Pi 3. The Raspberry Pi 3 is used to process inputs from received sensors and process images for human detection. The PIR sensor detects the movement around the sensor to activate the webcam to capture a picture. Then, the object recognition is performed using histogram of gradient (HoG) and support vector machine (SVM) to detect the suspicious object. If the suspicious object is detected, then alarm is activated to warn the house owner about the existence of intruder. The evaluation results show that it takes in average 2 seconds for proposed system to detect the intruder. It also shows that the system can successfully detects the intruder with accuracy of 89%.

Room   C0306
Time   13.30 - 15.00
Chairman Prof. Fabrice Meriaudeau

ID	Presenter	Author	Title
556	Ida Bagus Kerthyayana Manuaba	Ida Bagus Kerthyayana Manuaba	The Design and Game Mechanic of Combined Game Application Prototype for Learning Social Business
605	Roland P. Abao	Roland P. Abao; Cenie V. Malabanan; Adrian P. Galido	Design and Development of FoodGo: A Mobile Application using Situated Analytics to Augment Product Information
760	Rania M. Ghoniem	Rania M. Ghoniem , H. A. Abas, H. A. Bdair	Three-dimensional Simulation System based Intelligent Object-oriented Paradigm for Conducting Physics Experiments
822	Andry Chowanda	Yen Lina Prasetio, Andry Chowanda, Sigat Rambito, Alan Yudhistira, Sintong, Fahry Aulia	Teaching Social Critique to Adults with A Desktop Horror Myth Game

ID : 556

THE DESIGN AND GAME MECHANIC OF COMBINED GAME APPLICATION PROTOTYPE FOR LEARNING SOCIAL BUSINESS

Ida Bagus Kerthyayana Manuaba [a]

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Abstract
Modern technology allows people to utilize mobile devices as innovative media for education's game. One of the innovations known as "Combined Game" concept, which is mixing a digital form and real-life objects for a game environment. In another area, there is also phenomenon of business concept known as "Social Business". Social Business has been introduced by Muhammad Yunus, an awardee of Nobel Peace Prize for founding the Gramen Bank and Microcredit concept. Today, the concept of Social Business has also been enthused by people around the world. A lot of communities, including educational institutions, have been introduced this concept in their learning materials. Applying a Combine Game concept, especially to learn and understand further about the basic concept of Social Business, could become a potential solution for an interactive learning media. This paper describes the development of a Combined Game application as a media to introduce Social Business to people in more interactive and fun way. This paper describes the design and mechanic of the combined game application. In addition, an initial testing was conducted to see how long playing time is required to play for each level on this game prototype. From this initial testing this game found that it has unique gameplay where the winner of each level of the game cannot be predicted.

DESIGN AND DEVELOPMENT OF FOODGO: A MOBILE APPLICATION USING SITUATED ANALYTICS TO AUGMENT PRODUCT INFORMATION

Roland P. Abao [a], *, Cenie V. Malabanan [b] , Adrian P. Galido [c]

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Abstract

Situated analytics (SA), a combination of augmented reality and visual analytics, is a potential tool in enhancing user understanding of information. This study created a mobile application (app) named FoodGo, which utilizes SA to present product information in mobile devices, to help consumers in making a food choice in a grocery shopping scenario. FoodGo was designed in such a way that users just need to scan the barcode of a food product using the smartphone's camera and the helpful food information will then be augmented in the smartphone display using the concept of situated analytics. An iterative process of design analysis, prototype development, and user interface evaluation was used in designing and developing the mobile app prototype. The iterative process was limited to three iterations only and the data gathered in each iteration was used to improve the mobile app in the succeeding iterations. After the iteration cycles, the final version of the Android FoodGo mobile app was developed and was ensured that all the components, which includes the barcode scanning and the cloud database, were working properly. The effectiveness of using the mobile app in helping consumers make a healthier food choice was assessed in a mock-up grocery shopping environment. The result indicated that using FoodGo significantly improves the success rate of users to select a healthier food product. Further improvements for the FoodGo mobile app include putting a tutorial on how to use the mobile app when opened for the first time and having an option to input special health conditions such as diabetes for a more personalized way of informing the user about the food products.

THREE-DIMENSIONAL SIMULATION SYSTEM BASED INTELLIGENT OBJECT-ORIENTED PARADIGM FOR CONDUCTING PHYSICS EXPERIMENTS

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[c] Psychological and Educational Science Department, Faculty of Specific Education, Mansoura University, Mansoura, Egypt

Abstract

Despite the large number of studies conducted in the area of simulation, yet there are no generic paradigms or even architectures for developing three-dimensional (3D) simulation applications with autonomous intelligent objects. This paper introduces a novel intelligent 3D simulation system to support conducting experiments in Physics. First of all, an intelligent object-oriented paradigm is proposed with the aim of system development. Accordingly, the physical work-cell entities of each experiment are modeled through defining their attributes and methods inside objects or classes of an application hierarchy. Then, we construct a knowledge base (KB) documents the rules/algorithms which work on the data entities and 3D objects using two kinds of object rules, namely: property, and action rules. The student's simulation layer allows him/her using the system to walk through the virtual Physics lab based on a pre-defined walking model. S/he can access the simulation area to conduct experiments based on mathematical collision detection. In terms of software engineering, the system makes the Physics experiments easier by making more modular and reusable their applicable parts. Furthermore, a major pedagogical

goal is achieved through allowing the learner tuning parameters, fix a part of a device and visualize output. This gives him/her a good explanation by visualizing how different parameters influence the experiment results. The Weighted Methods per Class (WMC), and the Reusability rank (RR) are the software metrics used to validate the proposed system. Furthermore, the experimental scenario is executed by applying the proposed system to students to estimate its caliber and efficiency. For measuring students' performance, we used one exploratory group depending on pre/ and post-tests. The results reveal the contribution of the system to learners' performance regarding Physics experimentation.

ID : 822

TEACHING SOCIAL CRITIQUE TO ADULTS WITH A DESKTOP HORROR MYTH GAME

Yen Lina Prasetio[a], Sigat Rambito[a], Alan Yudhistira[a], Sintong Fahry Aulia[a], Andry Chowanda[a],

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Abstract
This paper propose a serious game to teach social critique to adults with a desktop horror myth game, as the moral story of the myth fits to the social subject to teach to the player/learner. Social problems have been an interesting subject to talk, discuss, and debate in all around the world. This due to the wave of change and shift in the population cohort, and influence the behaviour differences within population cohort, causing a plenty of social problems in the world. Research shown that in Indonesia, social problem is one of the highlight in the society nowadays. Hence, this research is aiming to contribute to a design of a serious game teach social critique to adults, and the evaluations of the serious game design for social problems. The results demonstrate the participants rated that they are happy with the game. Moreover, from the questionnaire, the average score for all items is 3,968, and the highest score belongs to Q6 (4,223), while the lowest score belongs to Q4 (3,800). Moreover, 81% of the players got the right messages about social critique to the society. Finally, the short interview shows the participants felt that the experience when playing the game empower them to get right messages about social critique to the society, where 90% agreed they have gained knowledge and awareness regarding to Narcotics Psychotropic and Addictive Substance and culture of littering arise in the Indonesia.

ID	Presenter	Author	Title
820	Zulfany Erlisa Rasjid	Reina Setiawan, Zulfany Erlisa Rasjida, Andy Effendi	Design Metric Indicator to Improve Quality Software Development (Study Case: Student Desk Portal)
688	Nazatul Nurlisa Binti Zolkipli	Nazatul Nurlisa Zolkipli, Amir Ngah, Aziz Deraman	Version Control System: A Review
582	Diana	Aria Sukma, Suharjito, Diana	Replication System of Oracle Database Standard Edition by Utilizing Traditional Archived Log
693	Louis Lady Zhangrila	Louis Lady Zhangrila	Accuracy Level of $P Algorithm for Javanese Script Detection on Android-Based Application

ID : 820
Design Metric Indicator to Improve Quality Software Development (Study Case: Student Desk Portal)

Reina Setiawan[a,b], Zulfany Erlisa Rasjid[a,b], Andy Effendi[c]

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[c]Information Systems Department, School of Information Systems, Bina Nusantara University, Jl. K.H. Syahdan No. 9, Jakarta 11480, Indonesia

Abstract
The development of Information Technology and Communications facilitate people running their daily lives. One of the important role in development is application development which is the main element in the development of technology. Due to this reason, it is required to have an application that would satisfy the criteria of standard qualities without any tolerance towards error and failure during process. This paper focused on the design of indicator that can be used in measuring qualities in application development, with Student Desk Portal at Bina Nusantara University used as case study is accessed by thousands of students each week. For this reason, the quality of the application is extremely important. The designed indicators are applied in the development of 35 modules in the Student Desk Portal application. The result shows that after applying the designed indicators in the application development, the number of bugs and errors found in the implementation drastically reduced from 43% to 23%.

ID : 688
Version Control System: A Review

Nazatul Nurlisa Zolkifli, Amir Ngah, Aziz Deraman

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Abstract
Version Control Systems (VCS) have been used by many software developers during project developments as it helps them to manage the source codes and enables them to keep every version of the project they have worked on. It is the way towards managing, organizing, and coordinating the development of objects. In Software Engineering, software developers need to collaborate with each other to develop a better project. Thus, VCS is very useful because it also supports a collaborative framework that makes it easy for software developers to work together effectively. Without VCS, collaboration is very challenging. This paper discusses the background and the related works about VCS that have been studied by researchers. The purpose of this paper is to convey the knowledge and ideas that have been established on VCS.

ID : 582
Replication System of Oracle Database Standard Edition by Utilizing Traditional Archived Log

Aria Sukma[a], Suharjito[a], Diana[b]

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[b]Computer Science Department, School of Computer Science, Bina Nusantara University, Jakarta, Indonesia 11480

Abstract
This article will be described replication system of oracle database standard edition by utilizing traditional archived log, because in this database version doesn't have replication feature like in oracle database enterprise edition. The research methodology which being used by this research are data collection, analysis, and design. Literature study is used for data collection methods. Analyze current replication system such as data-guard and Golden-gate are used for analysis methods. Design is method by development of prototype application to run extract, transport and recovery function for source and target database. The result of this research is a replicator application prototype for oracle database standard edition by utilizing traditional archived log was created by transaction at database. The conclusions of this are replication performance by utilizing traditional archived log has quite similarly function compared by data-guard that exist in Oracle enterprise edition in terms of data replication

Accuracy Level of $P Algorithm for Javanese Script Detection on Android-Based Application

Louis Lady Zhangrila

Human Computer Interaction Surya University, Grand Serpong Mall, Kota Tangerang, Banten 15143, Indonesia

Abstract

The Javanese language has millions of speakers, making it one of the most widely-used languages in Indonesia and in the world at large. While the Javanese language still thrives in daily conversation, the number of users of Javanese script, the traditional script of the language, decreases every day. Many applications have been built to increase awareness and educate the public in the Javanese script, some of them using on stroke detection or image recognition to translate Javanese script for the user. $P stroke recognition was invented by Radu-Daniel Vatavu and friends in 2012 and has been tested to a high accuracy level in the detection of Latin alphabet characters and in sign detection. With the assumption that Javanese script can be recognized better, we evaluated the $P algorithm in detecting Javanese script using Cross-Validation and Micro- and Macro-average evaluation measure rule. A touchscreen Android-based application was built using Unity Engine.

Day 1   **Friday, 07 September 2018**
Paralel Session 2
Room   C0303
Time   15.30 - 17.00
Chairman   Williem, Ph.D.

ID	Presenter	Author	Title
607	Rinda Wahyuni	Rinda Wahyuni	Combining Linguistic, Semantic and Lexicon Feature for Emoji Classification in Twitter Dataset
802	Md Saiful Azad	Gollam Rabby, Saiful Azad, Mufti Mahmud, Kamal Z. Zamli, Mohammed Mostafizur Rahman	A Flexible Keyphrase Extraction Technique for Academic Literature
762	I Gede Putra Kusuma Negara	Kevin Santoso, Gede Putra Kusuma	Face Recognition Using Modified OpenFace
654	barkha bansal	barkha bansal, sangeet srivastava	On predicting elections with hybrid topic based sentiment analysis of tweets

ID : 607

Combining Linguistic, Semantic and Lexicon Feature for Emoji Classification in Twitter Dataset

Rinda Wahyuni [a] , Indra Budi [b *]

[a b] Faculty of Computer Science, Universitas Indonesia, Jl. Margonda Raya, Depok 16424, Indonesia

Abstract
Emoji is a picture character used in social media to express emotion of a text message. With the increasing use of emoji few who study the relationship between emoji and text. Due to diversity of emoji and the similarity meaning between emoji, emoji classification task is more relative complex than common text classification task. In this paper, we build a computational model by extracted various features namely: linguistic feature, semantic feature, and lexicon feature to improve emoji classification performance. Then we train 400k tweet using two different classifiers Stochastic Gradient Descent Classifier and Logistic Regression. The experiment showed that our proposed feature using Logistic Regression outperformed the baseline.

A Flexible Keyphrase Extraction Technique for Academic Literature

Gollam Rabby[a], Saiful Azad[a,b,], Mufti Mahmud[c], Kamal Z. Zamli[a,b], Mohammed Mostafizur Rahman[d]

[a]Faculty of Computer Systems & Software Engineering, University Malaysia Pahang, Gambang, Kuantan, Malaysia. [b]IBM Centre of Excellence, Gambang, Kuantan, Malaysia. [c]Department of Computing and Technology, Nottingham Trent University, Nottingham, United Kingdom. [d]Department of Mathematics, American International University - Bangladesh (AIUB), Dhaka, Bangladesh.

Abstract
A keyphrase extraction technique endeavors to extract quality keyphrases from a given document, which provide a high-level summary of that document. Except statistical keyphrase extraction approaches, all other approaches are either domain-dependent or require a sufficient amount of training data, which are rare at present. Therefore, in this paper, a new tree-based automatic keyphrase extraction technique is proposed, which is domain-independent and employs nominal statistical knowledge; but no train data are required. The proposed technique extracts a quality keyphrase through forming a tree from a candidate keyphrase; and later, it is expanded or shrunk or remained in the same state depending on other similar candidate keyphrases. At the end, keyphrases are extracted from the resultant trees based on a value, μ (which is the Maturity Index (MI) of a node in the tree), which enables flexibility in this process. A small μ value would yield many and/or lengthy keyphrases (greedy approach); whereas, a large μ value would yield lower and/or abbreviated keyphrases (conservative approach). Thereby, a user can extract his/her desired-level of keyphrases through tuning μ value. The effectiveness of the proposed technique is evaluated on an actual corpus, and compared with Rapid Automatic Keyphrase Extraction (RAKE) technique.

Face Recognition Using Modified OpenFace

Kevin Santoso, Gede Putra Kusuma

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Abstract
Face recognition is a widely utilized biometric method due to its natural and non-intrusive approach. Recently, deep learning networks using Triplet Loss have become a common framework for person identification and verification. In this paper, we present a new method on how to select appropriate hard-negatives for training using Triplet Loss. We show that, by incorporating pairs which would otherwise have been discarded yields better accuracy and performance. We also applied Adaptive Moment Estimation algorithm to mitigate the risk of early convergence due to the additional hard-negative pairs. In LFW verification benchmark, we managed to achieve an accuracy of 0.955 and AUC of 0.989 as opposed to 0.929 and 0.973 in the original OpenFace.

On Predicting Elections with Hybrid Topic Based Sentiment Analysis of Tweets

Barkha Bansal[a] , Sangeet Srivastava[a,*]

[a]Department of Applied Sciences, The NorthCap University, Gurugram, India

Abstract

Twitter sentiment analysis is quick and inexpensive way for real-time election monitoring and modern day election predictions. Recent research relies on explicit mining of public sentiment using lexical and syntactic features in tweets. However, underlying implicit word relations and co-occurrences are overlooked. This task of capturing semantic relations and word co-occurrences further becomes challenging in case of short length tweets where words are limited. In this paper, we introduce a novel method: Hybrid Topic Based Sentiment Analysis (HTBSA) with the aim of capturing word relations and co-occurrences in short length tweets for election prediction using tweets. First, we extract latent topics from rich corpus of short texts using Biterm Topic model (BTM), then sentiments for each topic are learnt from pre-existing lexical resources. Finally, sentiment score of each tweet is calculated using sentiment orientation and weight of each topic contained in it. We use more than 300,000 tweets, collected from 1st-20th February, 2017, to predict Uttar Pradesh (U.P) legislative elections. Geo tagging is employed for key words which are not exclusive to the elections. Results show that HTBSA has out performed existing Twitter based election prediction techniques with a decrease of 3.5% in MAE. Our study can be easily and efficiently extended for real time election monitoring and future election predictions.

Day 1   **Friday, 07 September 2018**
Parallel Session 2
Room   C0304
Time   15.30 - 17.00
Chairman   Dr. Alexander A. S. Gunawan

ID	Presenter	Author	Title
622	Safarudin Gazali Herawan	Safarudin Gazali Herawan, Kamarulhelmy Talib, Azma Putra	Prediction of heat energy from the naturally aspirated internal combustion engine exhaust gas using artificial neural network
816	Dr. Manohara Pai M M	Sucheta V. Kolekar, Radhika M. Pai, Manohara Pai M.M.	Adaptive User Interface for Moodle based E-learning System using Learning Styles
815	Aditya Kurniawan	Aditya Kurniawan, Bahtiar Saleh Abbas , Agung Trisetyarso, Sani Muhammad Isa	Static Taint Analysis Traversal with Object Oriented Component for Web File Injection Vulnerability Pattern Detection
809	Kahlil Muchtar	Kahlil Muchtar, Faris Rahman, Tjeng Wawan Cenggoro, Arif Budiarto, Bens Pardamean	An Improved Version of Texture-based Foreground Segmentation: Block-based Adaptive Segmenter

ID : 622

Prediction of heat energy from the naturally aspirated internal combustion engine exhaust gas using artificial neural network

Safarudin Gazali Herawan (a), Kamarulhelmy Talib (b), Azma Putra (b)

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(b) Faculty of Mechanical Engineering, Universiti Teknikal Malaysia Melaka, HangTuah Jaya, 76100 Durian Tunggal, Malaysia

Abstract
The waste heat from exhaust gases produce a significant amount of heat energy, which has usually been implemented for combined power and heating applications. This paper describes the heat energy from a naturally aspirated internal combustion engine in a sedan car. From the exhaust, which heat energy can be produced, is presented and suggested that heat energy could significantly enhance the efficiency performance by recovering the energy. This concept is thermodynamically feasible and depending on the load applied to the engine. Based on the results above, it was found that the waste heat energy was up to 23 kW. Hence, to harvest this exhaust waste heat energy is a worthy effort and the artificial neural network (ANN) prediction model is developed to give reasonably good agreement with the measured data.

Adaptive User Interface for Moodle based E-learning System using Learning Styles

Sucheta V. Kolekar, Radhika M. Pai, Manohara Pai M.M.

Dept. of Information and Communication Technology Manipal Institute of Technology, Manipal Academy of Higher Education (MAHE), Karnataka, India

Abstract
Education is the process of facilitating learning, or the acquisition of skills, knowledge, values, beliefs, and habits. With the development of technology, educators and learners are moving towards E-Learning applications. These E-Learning applications are open source applications that have their own advantages and disadvantages. By modifying these applications as per their needs, educational institutions can adopt them such that the students are guided constantly even outside their classrooms. The paper presents the approach to identify the learning styles for adaptation as pe Felder-Silverman Learning Style Model (FSLSM). An e-learning application developed using Moodle framework with the functionality to capture the usage data of learners. The usage data is used to cluster the learners as per learning categories of FSLSM. The customization is provided on the portal by generating the adaptive user interface for each learner based on learning style of FSLSM. The adaptation of system is validated using statistical analysis and the impact of adaptation on the learning has been identified.

Static Taint Analysis Traversal with Object Oriented Component for Web File Injection Vulnerability Pattern Detection

Aditya Kurniawan[ab], Bahtiar Saleh Abbas[db], Agung Trisetyarso[b], Sani Muhammad Isa[cb]

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[b]Computer Science Department, BINUS Graduate Program − Doctor of Computer Science, Bina Nusantara University, Jakarta, Indonesia 11480
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[d]Industrial Engineering Department, Faculty of Engineering, Bina Nusantara University, Jakarta, Indonesia 11480

Abstract
We introduce a composition of object-oriented component PHP grammar for taint analysis. Our novel method successfully restructured the PHP parser and reduced grammar artifact objects that must be visited in a taint analysis process by up to 52% grammar variation. Taint analysis is an analysis that detects any injection vulnerability pattern in source code. The analysis identifies the information flow of untrustworthy input that affects the sensitive sink or part of the system. The static taint analysis was run on an abstract syntax tree and traversed all nodes. A static taint analysis uses a parser to traverse abstract syntax trees of the source code. A web PHP parser has 140 grammar combinations in an abstract syntax tree, which has to be traversed to recognize the tainted flow pattern. Additionally, there are many variations of syntax and coding styles for tainted flow patterns. Therefore, the amount of combinations will consume many computation resources.

ID : 809
An Improved Version of Texture-based Foreground Segmentation: Block-based Adaptive Segmenter

Kahlil Muchtara (a,b), Faris Rahman (a), Tjeng Wawan Cenggoro (c,e), Arif Budiarto (c,e), Bens Pardamean (d,e)

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(b) Syiah Kuala University, Aceh, Indonesia
(c) Computer Science Department, School of Computer Science, Bina Nusantara University, Jakarta, Indonesia 11480
(d) Computer Science Department, BINUS Graduate Program - Master of Computer Science Program, Bina Nusantara University, Jakarta, Indonesia 11480
(e) Bioinformatics and Data Science Research Center, Bina Nusantara University, Jakarta, Indonesia 11480

Abstract
Foreground segmentation is one of moving object detection techniques of computer vision applications. To date, modern moving object detection methods require complex background modeling and thresholds tuning to confront illumination changes. This paper proposes an adaptive approach based on non-overlapping block texture representation. It aims to design a computationally light and efficient solution to improve the robustness of detection. We evaluate our proposed method on internal and public sequences and provide the quantitative and qualitative measurements. Experimental results show that the proposed method can improve the results of previous method and suitable for real-time challenges.

ID	Presenter	Author	Title
577	Herru Darmadi	Herru Darmadi, Suryadiputra Liawatimena, Bahtiar Saleh Abbas, Agung Trisetyarso	Hypermedia Driven Application Programming Interface for Learning Object Management
658	Jurike V. Moniaga	Jurike V. Moniaga, Andry Chowanda, Agus Prima, Oscar Oscar, M. Dimas Tri Rizqi,	Facial Expression Recognition as Dynamic Game Balancing System
511	Suharjito	Parama Fadli Kurnia, Suharjito	Business Intelligence Model to Analyze Social Media Information
564	Suharjito	Aria Sukma, Suharjito, Diana	Human Anatomy Learning Systems Using Augmented Reality on Mobile Application

ID : 577

HYPERMEDIA DRIVEN APPLICATION PROGRAMMING INTERFACE FOR LEARNING OBJECT MANAGEMENT

Herru Darmadi [a] , Suryadiputra Liawatimena [b] , Bahtiar Saleh Abbas [c] , Agung Trisetyarso [d]

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[c] Industrial Engineering Department, BINUS Graduate Program - Doctor Computer Science
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[a,b,c,d] Bina Nusantara University, Jl. Kebun Jeruk Raya No 27, Kemanggisan, Jakarta, 11480, Indonesia
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Abstract
The research purpose is to create a hypermedia driven API for learning object management. The research focuses on conception, design, implementation and evaluation of the learning object management hypermedia API. The hypermedia API was designed based on learning object models, hypermedia concepts, and related studies. Learning object model can be represented and manipulated as a hypermedia resource. It contains page resources with text and links to multimedia elements. The hypermedia API was designed using UML and represented in HTML5 because of its rich affordance. The implementation and evaluation phase were conducted by testing the API using three different client's software to prove the concept of hypermedia as the engine of application state for managing learning objects. The results show that the hypermedia API for learning object management is accessible, consistent, and discoverable by heterogonous client applications.

ID : 658
FACIAL EXPRESSION RECOGNITION AS DYNAMIC GAME BALANCING SYSTEM

Jurike V. Moniaga [a], Andry Chowanda [a],_, Agus Prima [a], Oscar [a], M. Dimas Tri Rizqi [a]

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Abstract
This research proposes a dynamic game balancing by using Facial Expression Recognition to enhance the player's experience when playing the game. Research has shown that players generally express their emotions when playing the game. This allow us to capture the player's expression from their face and use it to dynamically adjust the game difficulties. A preliminary study was conducted to capture what kind of game that would be suitable to test dynamic balancing. The game with a dynamic balancing system then was developed using Scrum methodology as the software development methodology. Furthermore, the dynamic balancing in the game was simulated in the computer and evaluated, with some of items from Immersive Experience Questionnaire, with players played two versions of game, one with dynamic balancing activated and the other with-out dynamic balancing activated. The results evidently show that there was some statistically significant enhancement in the game with Facial Expression Recognition activated as a game dynamic game balancing compare to the one with-out Facial Expression Recognition.

ID : 511
Business Intelligence Model to Analyze Social Media Information

Parama Fadli Kurnia, Suharjito[*]

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Abstract
Social media is a platform to share information that is very liked by everyone nowadays because some of the facilities that make it easier for us to communicate with each other, share documents, chat and even create a community. In addition, we can also analyze the content of social media by using several methods in data mining, so that we can get new the information to support decision making that can bring benefits to individuals and companies. The purpose of this research, to create a business intelligence dashboard to observe the performance of each Topic or channel of news posted to social media accounts such as Facebook and Twitter. Topical performance in social media is the number of Topics in articles posted to social media getting like, share, comment etc. To be able to know the Topic of a news post in social media, used some text classification techniques such as Naive Bayes, SVM and Decision Tree. The comparative results of the algorithms are taken which has the best accuracy of SVM for subsequent implementation in the data warehouse. Meanwhile, the business intelligence dashboard data source will be sourced from the data warehouses that have been made before.

ID : 564

HUMAN ANATOMY LEARNING SYSTEMS USING AUGMENTED REALITY ON MOBILE APPLICATION

Michael H Kurniawan [a] , Suharjito [a] , Diana [b] , Gunawan Witjaksono [a]

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Abstract

Students generally experience difficulties in learning human body anatomy due to constraints to visualize the body anatomy from 2D into 3D image. This research aims to develop a human anatomy learning system using augmented reality technology.

By using this system, it is expected that students can easily understand the anatomy of the human body using a 3D image visualization. The method used in this system is augmented reality marker on mobile computing platform. The marker is captured by taking a picture. Then, the captured image is divided into pieces and the pattern is matched with images stored in the database. In this research, we use Floating Euphoria Framework and combine it with the SQLite database. Augmented reality anatomy system of the human body has features that can interactively display the whole body or parts of the human organs. To evaluate the usefulness of the application, we tested the augmented reality anatomy system with high school students and medical students for learning the anatomy of the human body. The results show that the human anatomy learning system with interactive augmented reality visualization helps students learn human anatomy more easily.

Room	C0306	
Time	15.30 - 17.00	
Chairman	Lili Ayu Wulandhari, Ph.D.	

ID	Presenter	Author	Title
698	Andry Chowanda	Andry Chowanda, Alan Darmasaputra Chowanda	Generative Indonesian Conversation Model using Recurrent Neural Network
795	Siti Komsiyah	Siti Komsiyah, Meiliana, Hasegaf Ekaputera Centika	A Fuzzy Goal Programming Model For Production Planning in a Furniture Company
823	Heruna Tanty	Heruna Tanty, Syarifah Diana Permai, Herena Pudjihastuti	In vivo anti-diabetic activity test of ethanol extract of the leaves of Cassia Siamea Lamk
825	Margaretha Ohyver	Margaretha Ohyver, Herena Pudjihastuti	Modeling The Number Of Diphtheria Cases In East Java Province Using Zero-Inflated Poisson Regression

ID : 698
Generative Indonesian Conversation Model using Recurrent Neural Network with Attention Mechanism

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Abstract
This research contributes to data collection for Indonesian Language conversation corpus or dataset collected from conversation in the movies through 1961 subtitles with 1678320 unique words. The dataset collected thus trained with deep learning algorithm, a dual encoder Recurrent Neural Network (RNN), Long-Short Term Memory (LSTM) with Attention mechanism with the best result was 2.37% unknown words, loss rate was 1.66, and perplexity of 4.96, trained with vocabulary size of 24000. The dataset could be used for many machine (deep) learning for Natural Language Processing Problem in Indonesian Language, while the pre-trained model can be integrated into several system such as agent-based system, be they a chat-bot or an Embodied Conversational Agent (ECA). For future work, more data will be collected not only from the movie conversation but also natural human-human conversation in Indonesian Language.

ID : 795
A Fuzzy Goal Programming Model For Production Planning in Furniture Company

Siti Komsiyah[a], Meiliana[b], Hasegaf Ekaputera Centika[a]

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Bina Nusantara University, Jakarta, Indonesia 11480

Abstract
In the industrial world, there is always a problem of supply chain and always be for a long time. Production planning is one of its stages. Almost all of companies want to make production process efficient and optimized with minimum expenses while still meet with the market demand. This paper present production planning problem in furniture company with different operational constraint, including production time, warehouse capacity, and quantity of raw materials. The fuzzy goal programming applied to maximize the profit, minimize the production cost and minimize raw materials cost. In this paper was conducted at the furniture company CV. Arte Jaya which aims to help company for decision making regarding to production planning model by using fuzzy goal programming. This Method is suitable for CV. Arte Jaya because the objective function can be adapted to preferences of the company. The result obtained application program for solving decision making problem about the amount of production that is exact and still meet with the market demand. The application program that has been created is able to simplify the user's performance of CV. Arte Jaya.

ID : 823
In vivo anti-diabetic activity test of ethanol extract of the leaves of Cassia Siamea Lamk

Heruna Tanty[a]1, Syarifah Diana Permai[b], Herena Pudjihastuti[b]

[a]Department of Mathematics, School of Computer Science, Bina Nusantara University, Jakarta 11480
[b]Department of Statistics, School of Computer Science, Bina Nusantara University, Jakarta 11480

Abstract
Cassia siamea Lamk has been used as a traditional medicine in Indonesia including to treat diabetes mellitus (DM). This study aimed to investigate in vivo anti-diabetic activities of the ethanol extract, ethyl acetate fraction and n-hexane fraction of Cassia siamea Lamk in alloxan-induced mice. The study concluded that: (1) the ethanol extract and n-hexane fraction of Cassia siamea Lamk (Juar) leaves have anti-diabetic activity in Webster albino mice induced with alloxan, (2) The extract of Cassia siamea Lamk leaves, the fractions of 500 mg ethyl acetate and 500 mg n-Hexana of Cassia siamea Lamk provided better performances in lowering blood glucose levels compared to Ethanol extracts both 500 mg and 1000 mg. In the form of ethyl acetate and n-hexane fraction at a dose of 150 mg/kg BW provided the highest anti-diabetic activity compared to the other test groups that are able to decrease blood sugar level by 10.25% and 9.98% respectively. Its effect is equivalent to glibenclamide at a dose of 0.65 mg/kg BW which can lower blood sugar levels by 9.27%. Thus Cassia siamea Lamk leaf is very potential as an alternative drug antidiabetes mellitus, and (3) the 1000 mg Ethanol extract, 150 mg Ethyl acetate and 150 mg n-Hexana had no difference effects in lowering blood glucose levels compared to the anti-diabetic chemical drug glibenclamide.

Modeling The Number Of Diphtheria Cases In East Java Province Using Zero-Inflated Poisson Regression

Margaretha Ohyver[a*], Herena Pudjihastuti[b]

[a,b]Statistics Department, School of Computer Science, Bina Nusantara University, Jakarta, Indonesia 11480

Abstract

Indonesia often faced outbreak of diphtheria, a life-threatening communicable disease. East Java is the most severely affected province contributing approximately 80% of the total cases in the country. This study aims to apply the Zero -inflated Poisson (ZIP) regression to the diphtheria data of East Java Province 2016, in order to determine the factors that most affect the number of cases of diphtheria. The analysis showed that the diphtheria immunization coverage and the number of community health centers are the factors that most affect the number of cases of diphtheria. The model states that every 1 percent increase in diphtheria immunization coverage can decrease the number of cases of diphtheria by 0.624% and every 1 unit increase in the number of community health center will be able decrease the number of cases of diphtheria by 0.107%.

Room   C0302

Time   10.30 - 12.00

Chairman   Prof. Fabrice Meriaudeau

ID	Presenter	Author	Title
571	Bagus Sumargo	Bagus Sumargo	Comparing Better Environmental Knowledge based on Education and Income using The Odds Ratio
853	Muhammad Fadhlan Putranto	Muhammad Fadhlan Putranto, Ari Moesriami Barmawi, Bambang Ari Wahyudi	Permutation Modification of Riversible Data Hiding Using Difference Histogram Shifting in Encrypted Medical Image
623	Lili Ayu Wulandhari	Lili A. Wulandhari, Siti Komsiyah, Wisnu Wicaksono	Bat Algorithm Implementation on Economic Dispatch Optimization Problem
618	Leila Ismail	Leila Ismail, Huned Materwala	EATSVM: Energy-Aware Task Scheduling on Cloud Virtual Machines

ID : 571
Comparing Better Environmental Knowledge Based on Education and Income Using The Odds Ratio

Bagus Sumargo[a]

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Abstract

Social Environmental factors is a weak point of the cause of sustainable development cannot run smoothly, and one of the factors that need improvement is environmental knowledge. Condition of environmental knowledge in DKI Jakarta Provinces in alert category, and only the higher education variables and the middle income of the population with good environmental knowledge. Based on data sources from Indonesia Environment Caring Attitude (ECAS) 2013, and using The Odds Ratio methods, it will be known the amount of population comparison that has better environmental knowledge for each variable of higher education or middle income.

ID : 853
Permutation Modification of Reversible Data Hiding Using Difference Histogram Shifting in Encrypted Medical Image

Muhammad Fadhlan Putranto[a], Ari Moesriami Barmawi[a], Bambang Ari Wahyudi[a]
[a]Telkom university, Telekomunikasi Street No. 01, Bandung, 40267, Indonesia

Abstract

Recently, preserving the integrity of medical record, especially image medical record is important. One method for preserving the integrity is reversible data hiding (RDH) proposed by Huang et al. Reversible data hiding algorithm can recover the original image from marked

image. In this paper, we implement reversible data hiding (RDH) on medical image because the correlation between the neighboring pixel can be preserved in encrypted image. In RDH, plain image is encrypted using specific encryption algorithm that consists of two processes (stream encryption algorithm and block permutation). However, since RDH used fixed block permutation, the security is weak against known plain text attack. To overcome this problem, dynamic permutation was proposed, such that the permutation would be specific for one session. In other session, different permutation would be used. Based on the experiment's result, it is shown that the security of the proposed method against known plain text attack is stronger than the previous method's one.

ID : 623
Bat Algorithm Implementation on Economic Dispatch Optimization Problem

Lili A. Wulandharia (a), Siti Komsiyah (b), Wisnu Wicaksono (b)

(a) Computer Science Department, School of Computer Science, Bina Nusantara University, Jakarta, Indonesia 11480
(b) Mathematics Department, School of Computer Science, Bina Nusantara University, Jakarta, Indonesia 11480

Abstract

Power plant is one of the substantial industry in a country since it supports various needs of people. Optimum cost for running this industry is a necessity so that power generated can be produce according to power demand with appropriate cost. Economic dispatch is an optimization approach in power system plant with objective function is to minimize cost by finding appropriate arrangement of generator output according electric requirement and capacity of the system. Previous researches have been proposed techniques to solve this problem, however a stable convergence and good computational efficiency is still required. Therefore, this paper proposes bat algorithm to minimize total generator cost from thermal power plant. Bat algorithm is one of nature inspired optimization problem which has advantage in stable convergence. The experiment results show that Bat algorithm is able to save approximately 1:23% compare to the actual cost and 0:12% to firefly algorithm.

ID : 618
EATSVM: Energy-Aware Task Scheduling on Cloud Virtual Machines

Leila Ismail[*], Huned Materwala

College of Information Technology, UAE University, Al Ain, UAE

Abstract

The pervasive adoption of cloud computing services and applications at a rapid rate makes the underlying data centers exacerbate the problems like carbon footprint and the operational cost, caused by the energy consumption. Various hardware-centric and software-centric approaches are proposed in the literature to reduce the energy consumption of the cloud data centers. Task scheduling algorithms are software-centric approaches to reduce the energy consumption in cloud computing systems. The majority of these algorithms focus on server consolidation leading to idle servers that reduce energy efficiency optimization. In this paper, we propose an Energy-Aware Task Scheduling algorithm on cloud Virtual Machines (EATSVM) that assigns a task to the VM where the increase in energy consumption is the least, considering both active and idle VMs. The algorithm also takes into consideration the increase in the energy consumption of the already running tasks on the VM due to increase in their execution time, while assigning a new task to that VM. We analyze the performance of our algorithm in a heterogeneous cloud environment with increasing number of tasks and compare the energy-savings of our algorithm with that of Energy Conscious Task Consolidation (ECTC) algorithm. Our experimental results demonstrate that EATSVM achieves energy-saving in a heterogeneous cloud-computing environment.

Day 2
Parallel Session 3
Room   C0303
Time   10.30 - 12.00
Chairman Dr. Faisal

Saturday, 08 September 2018

ID	Presenter	Author	Title
646	Ferdinand Ariandy Luwinda	Rini Wongso, Ferdinand Ariandy Luwinda, Williem	Evaluation of Deep Super Resolution Methods for Textual Images
686	Reza Rahutomo	Bens Pardamean, , Tjeng Wawan Cenggoro, Reza Rahutomo, Arif Budiarto, Ettikan Kandasamy Karuppiah	Transfer Learning from Chest X-Ray Pretrained Convolutional Neural Network for Learning Mammogram Data
715	Rita Layona	Rita Layona, Budi Yulianto, Yovita Tunardi	Web based Augmented Reality for Human Body Anatomy Learning
750	Gabriel Yakub Novian N. A.	Gabriel Yakub Novian N. A. Michael Harley Tandio Dr. Derwin Suhartono, S. Kom., M.T.I. Veronica Ong, S. Kom.	Optimization for Automatic Personality Recognition on Twitter in Bahasa Indonesia

ID : 646
Evaluation of Deep Super Resolution Methods for Textual Images

Rini Wongso*, Ferdinand Ariandy Luwinda, Williem

Computer Science Department, School of Computer Science, Bina Nusantara University, Jakarta, Indonesia 11480

Abstract
Super-resolution (SR) is one of the important pre-processing methods to refine the text images quality. Though there are numerous introduced algorithms to increase the spatial resolution for textual images, analysis on SR methods using deep learning is still insufficient. In this paper, we focus on evaluating the performance of various deep SR methods which have already confirmed to perform well in natural images super-resolution. Three evaluation metrics are used to analyze the performance of each method, such as peak signal-to-noise ratio (PSNR), structure similarity index (SSIM), and optical character recognition accuracy (OCRAcc). Experimental results show that deeper networks perform better than shallow networks for super-resolution problem. In overall, deep recursive convolutional network (DRCN) and deep laplacian pyramid network (LapSRN) alternately achieve the best performance. Then, very deep super-resolution network (VDSR) obtains the 3rd rank following both methods.

ID : 686
Transfer Learning from Chest X-Ray Pre-trained Convolutional Neural Network for Learning Mammogram Data

Bens Pardamean (a,c), Tjeng Wawan Cenggoro (b,c), Reza Rahutomo (c), Arif Budiarto (b,c), Ettikan Kandasamy Karuppiah (d)
(a) Computer Science Department, BINUS Graduate Program - Master of Computer Science Program, Bina Nusantara University, Jakarta, Indonesia 11480
(b) Computer Science Department, School of Computer Science, Bina Nusantara University, Jakarta, Indonesia 11480
(c) Bioinformatics and Data Science Research Center, Bina Nusantara University, Jakarta, Indonesia 11480
(d) NVIDIA Corporation

Abstract

Breast cancer is one of the deadliest cancer for female nowadays. Despite of the rapid advancement in medical image analysis with the rise of deep learning, development of breast cancer detection system is limited due to relatively small size of the publicly available mammogram dataset. In this paper, we discover an effective configuration for transfer learning from Chest XRay pre-trained Convolutional Neural Network to overcome the small-size mammogram dataset problem. We found that the best configuration achieve 90.38% validation accuracy for modified.

ID : 715
WEB BASED AUGMENTED REALITY FOR HUMAN BODY ANATOMY LEARNING

Rita Layona [a] , Budi Yulianto [b],* , Yovita Tunardi [c]

[a,b,c] Computer Science Department, School of Computer Science,
Bina Nusantara University, Jakarta, Indonesia 11480

Abstract

Human body anatomy becomes an important topic in Biology subject that must be understood since junior high school. Learning materials are mostly available in form of book and anatomy mannequin (puppet), but it is still insufficient enough to help students in understanding human body anatomy. Augmented Reality (AR) is a technology that combines a real thing into virtual environment interactively. This research purpose is to develop an AR application for human body anatomy learning to be more interesting and easier for student to understand. This application enables student to learn human body anatomy with 3D object interaction while previously using textbook and mannequin. Research method in for this study is by using quantitative method that collects data and then develops the prototype to prove the impact. Application development method is done by using waterfall method that includes planning (collect data and analysis), design (user interface and diagram), implementation, and testing. Research result is AR application for human body anatomy learning that contains 3D object, organ explanation and position that can be accessible on web.

ID : 750
Optimization for Automatic Personality Recognition on Twitter in Bahasa Indonesia

Gabriel Yakub N.N. Adi, Michael Harley Tandio, Veronica Ong, Derwin Suhartono

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Abstract

This paper presents optimization techniques for automatic personality recognition (APR) based on Twitter in Bahasa Indonesia, the mother tongue of Indonesians. Foremost, we discuss Twitter and its utilization as a resource for many types of research. Several previous studies have been attempted to predict users' personality automatically. However, only a few of them have done their research for Bahasa Indonesia data. Therefore, this paper discusses the optimization of APR in Bahasa Indonesia. We evaluate a series of techniques implementing hyperparameter tuning, feature selection, and sampling to improve the machine learning algorithms used. The personality prediction system is built on machine learning algorithms. There are three machine learning algorithms used in this study, namely Stochastic Gradient Descent (SGD), and two ensemble learning algorithms, Gradient Boosting (XGBoost), and stacking (super learner). By implementing this series of optimization techniques, the current study's evaluation results show huge improvement by achieving 1.0 ROC AUC score with SGD and Super Learner.

ID	Presenter	Author	Title
612	Muhammad Okky Obrohim	Muhammad Okky Ibrohim and Indra Budi	A Dataset and Preliminaries Study for Abusive Language Detection in Indonesian Social Media
828	Williem	Juan Leegard Ranteallo Sampetoding, Bagus Satriyawibowo, Williem, Rini Wongso, Ferdinand Ariandy Luwinda	Automatic Field-of-View Expansion using Deep Features and Image Stitching
832	Retno Kusumaningrum	Shiva Twinandilla, Satriyo Adhy, Bayu Surarso, Retno Kusumaningrum	Multi-Document Summarization Using K-Means and Latent Dirichlet Allocation (LDA) – Significance Sentences
826	Yulyani Arifin	Yulyani Arifina , Thomas Galih Sastria, Edo Barlian	User Experience Metric for Augmented Reality Application: A Review

ID : 612

A Dataset and Preliminaries Study for Abusive Language Detection in Indonesian Social Media

Muhammad Okky Ibrohim [*,a], Indra Budi [**,a]

[a]Faculty of Computer Science, Universitas Indonesia, Kampus UI Depok 16424, Indonesia

Abstract

Abusive language is an expression (both oral or text) that contains abusive/dirty words or phrases both in the context of jokes, a vulgar sex conservation or to cursing someone. Nowadays many people on the internet (netizens) write and post an abusive language in the social media such as Facebook, Line, Twitter, etc. Detecting an abusive language in social media is a difficult problem to resolve because this problem can not be resolved just use word matching. This paper discusses a preliminaries study for abusive language detection in Indonesian social media and the challenge in developing a system for Indonesian abusive language detection, especially in social media. We also built reported an experiment for abusive language detection on Indonesian tweet using machine learning approach with a simple word n-gram and char n-gram features. We use Naive Bayes, Support Vector Machine, and Random Forest Decision Tree classifier to identify the tweet whether the tweet is a not abusive language, abusive but not offensive, or offensive language. The experiment results show that the Naive Bayes classifier with the combination of word unigram + bigrams features gives the best result i.e. 70.06% of $F_1 - S$ core. However, if we classifying the tweet into two labels only (not abusive language and abusive language), all classifier that we used gives a higher result (more than 83% of $F_1 - S$ core for every classifier). The dataset in this experiment is available for other researchers that interest to improved this study.

Automatic Field-of-View Expansion using Deep Features and Image Stitching

Juan Leegard Ranteallo Sampetoding, Bagus Satriyawibowo, Williem, Rini Wongso, Ferdinand Ariandy Luwinda

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Abstract
Automatic photo enhancement, such field-of-view expansion, has become a challenging problem in computer graphics community. Due to the hardware limitation, image acquisition might get distracted by small field-of-view. Photo enhancement using internet photo collections has gained good performance in the past few years. However, it depends on the quality of 3D reconstruction. In this paper, we perform an automatic personal photo enhancement using the photo collection without any 3D reconstruction step. 2D global descriptor is used using NetVLAD deep architecture. Then, image stitching is applied for each similar candidate image. Experiment results show that the propose framework has promising results which could lead to further research.

Multi-Document Summarization Using K-Means and Latent Dirichlet Allocation (LDA) – Significance Sentences

Shiva Twinandilla[a], Satriyo Adhy[a], Bayu Surarso[b], Retno Kusumaningrum[a2]

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[b]Department of Mathematics, Universitas Diponegoro, Semarang 50275, Indonesia

Abstract
The contents of online news documents are almost the same that will lead to the redundancy of news or called yellow journalism. Yellow journalism can make it difficult for readers to distinguish documents containing fact or opinionated information. Therefore, it is necessary to extend more research about multi-document summarization so that readers can easily understand the intent of online news documents. Latent Dirichlet Allocation (LDA) - Significance Sentences is one of the methods for summarization, which performs better than the term frequency algorithm. However, document summarization using the method is only able to summarize multiple documents as a whole without grouping by topic. Subsequently, it can give an unorganized summary result. Therefore, this research proposes a novel summarization method which combines K-Means Clustering and LDA - Significance Sentences, so it can generate document summaries based on the topic. We implemented two scenarios of the experiment. The first experimental results the best alpha value is 0.001 with the ROUGE-1 value of 0.5545 and the best summarization level is 30% with the ROUGE-1 value of 0.6118. While the second experiment results, the best obtain of ROUGE-1 value is 0.61991 for the first cluster which is consists of documents 1, 2, 3, 4, and 6 and 0.6139 for the second cluster which is consists of 5, 7, 8. Multi-document summarization using the proposed method has good performance when the K-Means method can cluster the document according to the topic correctly, which is highly dependent on the accuracy of determining the initial centroid.

ID : 826
User Experience Metric for Augmented Reality Application: A Review

Yulyani Arifin[a] *, Thomas Galih Sastria[b], Edo Barlian[b]

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[b] Game Application & Technology Program, Computer Science Department,School of Computer Science, Bina Nusantara University, Jakarta, Indonesia 11480

Abstract
Augmented Reality Technology is developing rapidly and has been widely used in the field of education. Due to the ease of developing AR by non-professionals, User Experience (UX) is often not considered in the application. Currently, there are no standard measurements of UX for AR applications especially in Education. The authors reviewed previous research to obtain UX references and the existing measurement standards. From the results of the review, the metrics were analyzed based on the characteristics of AR, especially in the field of education. The metrics will be recommended for the UX measurement of an AR application. The available standard metrics can be used to determine the UX quality of an AR application and contribute to the improvement of UX in AR applications, especially in the field of Education.

Day 2   **Saturday, 08 September 2018**
Parallel Session 3
Room   C0305
Time   10.30 - 12.00
Chairman   Dr. Ivan Fanany

ID	Presenter	Author	Title
608	Jarot S. Suroso	Jarot Sembodo Suroso, Muhammad Aziz Fakhrozi	Assessment of Information System Risk Management with Octave Allegro at Education Institution
806	Yohan Muliono	Yohan Muliono, Hanry Ham, Dion Darmawan	Keystroke Dynamic Classification using Machine Learning for Password Authorization
837	Dr Manohara Pai M.M	Raghavendra Ganiga, Radhika M Pai, Manohara Pai M M, Rajesh Kumar Sinha	Private cloud solution for Securing and Managing Patient Data in Rural Healthcare System
632	Viany Utami Tjhin	Febrianti Widyahastuti, Vlany Utami Tjhin	Performance Prediction in Online Discussion Forum: state-of-the-art and comparative analysis

ID : 608
Assessment of Information System Risk Management with Octave Allegro at Education Institution

Jarot S. Suroso[a], Muhammad A. Fakhrozi[b]

Information Systems Management Department, BINUS Graduate Program, Master of Information Systems Management, Bina Nusantara University, Jakarta, Indonesia 11480

Abstract
Risk Management can reduce the risk of such as business processes that are not optimal, financial losses, declining reputation of the company, or the destruction of the company's business. To reduce damage to the information systems of the company's business process, there should be a risk management assessment. The use of information systems required to support the company's business processes, especially in education institution, as well as the MH. Thamrin University. In the use of information systems, will appear risks that will give negative impact on the institution. To reduce the negative impact, need to do a risk assessment. The method used in this thesis is the OCTAVE Allegro. Data were analyzed using the 8 steps in the OCTAVE Allegro and distributing questionnaires to users of information systems. The result, there are 34 areas of concern is mitigated, and the overall user feedback states agreed on mitigation steps. It was concluded that a risk assessment is useful for reducing the risks of information system

ID : 806
Keystroke Dynamic Classification using Machine Learning for Password Authorization

Yohan Muliono[a], Hanry Ham[b], Dion Darmawan[b]

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Abstract:
Many methods used to perform a password authentication using user's biometrics such as fingerprint recognition, retina recognition, voice recognition, etc. However, additional sensors needed to perform most of biometric recognition methods and will be invasive to users caused by additional tools needed to perform a password authentication. Keyboard Dynamics is one of the solution to perform password authentication without adding any tools which being disruptive to some users. The biometric keystroke dynamic system is relatively unexplored compared to other behavioral authentications discipline. Coupled with the limited number of studies that have been done compared with other biometric systems. Several machine learning research has been conducted but few of them applying deep learning for solving this problem. This research will be focusing in deep learning using optimizer to beat the previous research which using another machine learning techniques. This research shows a better result using optimizer in deep learning resulting in 92.60% accuracy.

ID : 837
Private cloud solution for Securing and Managing Patient Data in Rural Healthcare System

Raghavendra Ganiga, Radhika M Pai*, Manohara Pai M M, Rajesh Kumar Sinhaa

Manipal Institute of Technology, Manipal Academy of Higher Education, Manipal, India [a]School of Allied Health Science, Manipal Academy of Higher Education, Manipal, India

Abstract
Rural healthcare system in India is managing patient data in a traditional paper based system. Most of the rural hospitals in India are lacking in resources to maintain and manage the patient health data. As the world moves towards digitization, one of the key challenges in developing countries like India is in making the healthcare data accessible from rural to urban in digital form. Advancement in IT technology in healthcare sector has made it possible to maintain and manage the patient data in digital form in all levels of healthcare system. Cloud computing has emerged as a main in providing healthcare IT solution. Therefore, rural healthcare organizations should move towards building their own private cloud infrastructure which could be an excellent solution for the country's needs to have improved healthcare in rural areas. In private cloud, medical data is stored in databases in which some of the data in a medical database is sensitive in nature and access to this data should be limited to authorized persons. In this paper we propose a secure cloud architecture by building private cloud. The proposed private cloud architecture makes use of two database one for storing medical record and another for key. To reduce the risk of the health information leakage and safeguard the health data, hash and the encryption operation are performed before transmitting to the cloud database. With this technique, path for a third party to obtain the sensitive information stored in the cloud is being blocked. Therefore the proposed framework provides better secured services to the users.

ID : 632
Performance Prediction in Online Discussion Forum: state-of-the-art and comparative analysis

Febrianti Widyahastuti (a), Viany Utami Tjhin (b)

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Abstract
This survey paper is designed to present the state-of-the-art and comparative study of performance prediction in online discussion forum using data mining techniques and is dedicated to provide a guideline or roadmap as a prediction tool leading to effective interactions with full use of online discussion forum. There are different features, methods and techniques of data mining applying performance prediction in online discussion forum from 2011-2016 data. The inclination and the tip from the data help the researcher to analyze the potency of online discussion forum in predicting students' performance. Hence, it becomes a benchmark to find new and meaningful innovations for research, not only in education but also in all aspects of the fields. This paper also provides recommendations for students and educators to give sufficient information to preserve and ameliorate learning process by monitoring the progress of students' performance via prediction tools using data mining. Students' performances are mainly observed to decide the level of students' progress to determine if a student will remain involved or quit the study. Such critical issue is obviously faced by many educational institutions. Hence, performance prediction is obviously important to be applied, not only in educational field but also the others as it avoids the students' reduction potential in educational institutions. In addition, it also improves the students' standard and knack through active engagement. It also helps highly-risked students to recognize the weakness of the study program.

ID	Presenter	Author	Title
807	Hanry Ham	Hanry Ham, Martin Arlando Teng, Edric Wijaya, Raden Ardhika Wikopratama	Integration Citizen' Suggestion System for the Urban Development : Tangerang City Case
840	I Gede Putra Kusuma Negara	Marianus Magno Seran Bria, Gede Putra Kusuma, Louis Khrisna Putera Suryapranata	Promoting Timor Leste's Tais Cloth Using Mobile Augmented Reality Application
619	Nico Surantha	Rino Rino, Nico Surantha	Secure Portable Virtual Private Network with Rabbit Stream Cipher Algorithm
523	Melki Sadekh Mansuan	Melki Sadekh Mansuan, Benfano Soewito, Mohammad Hamdani	Designing Fiber Optic Network using Voronoi Diagram Approach

ID : 807
Integration Citizen' Suggestion System for the Urban Development: Tangerang City Case

Hanry Ham[a], Martin Arlando Teng[a], Edric Wijaya[a], Raden Ardhika Wikopratama[a]

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Abstract
A growth of city can be a benefit both for the government and the citizen its self. In addition, if the growth are not accompany with the advantages of the technology, it would be such a time and work stress. In this work will focus on the integration citizen's suggestion system. In addition to the suggestion system, citizen will be able to suggest an improvement through android application independently, various categories provided in the system. By implementing such system, the government will collect the data efficiently and will execute the proposal effectively without gap of time due to the traditional approach.

ID : 840
Promoting Timor Leste's Tais Cloth Using Mobile Augmented Reality Application

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Abstract
The results of observations showed that the book about Tais produced by Secretariat de Estado da Arte e Cultura (SEAC) has not been able to meet the needs of users because the information is less interesting and interactive. This paper's aim is to introduce the more interesting and interactive way to introduce Tais. Utilization of Augmented Reality (AR) technology in an application built with the Unity3D program is done to provide different way in presenting interesting and interactive information to its users. Based on the results in this paper, the developed application can handle the presentation in more interesting and interactive way. The ideal distance in the tracking process for target objects with size 7 x 6 cm is ranged from 6 cm to 30 cm, with the image ratio that can be detected at the farthest distance is 4% of the camera image. For the detection angle, the target object can be detected properly from approximately ±64 0 . From the data acquired, it can be said that AR can be used to introduce Tais in more interesting and interactive way.

ID : 619
Secure Portable Virtual Private Network with Rabbit Stream Cipher Algorithm

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Abstract
Employee mobility is an important issue for companies that have a goal to become global company. The company often asks the employees to do some assignments outside the office area, either inside or outside of their home country. A portable virtual private network (VPN) is a device that enables the employees to perform remote access connection to internal computer resources via internet. Therefore, the employee can still work on their assignments in company server while doing business travelling. In this paper, the secure and low power portable VPN prototype is being proposed. The prototype of the VPN portable gateway device is built using OpenVPN-R core applications that are modified from OpenVPN version 2.3.10 with OpenSSL version 1.0.2h. It is implemented into a single board computer (SBC) Raspberry Pi 3 Model B +. The modification performed in this system is the inclusion of Rabbit stream cipher algorithm to OpenSSL as one of the alternative options of TLS ciphersuites on OpenVPN. The prototype portable VPN gateway device generated from this research has Rabbit ciphersuites, platform independent, and has additional features inbuilt firewall. The simulation results show that the proposed prototype can perform secure data transfer. On the other hand the proposed Rabbit stream cipher algorithm shows better performance than other algorithm in terms of data transfer rate, CPU utilization, and memory usage which leads to smaller power consumption.

ID : 523
Designing Fiber Optic Network using Voronoi Diagram Approach

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Abstract

Fiber optic is a transmission medium which is currently the most good for data transmits, because it also can be transmitted even voice and video. In most cases a fiber optic network has been implemented using clustering method, where this method assumed inefficient due to the utilization of fiber optic that is not maximized, and the numbers of the Distribution Point used is more. Thus, this paper proposed new design using Voronoi diagrams in selecting the strategic location of the Distribution Point. By utilizing an image from Google map and html code, we created polygons of Voronoi based on the coordinate point of the candidate's location. The results are getting a value reduction/efficiency in context the use of the Distribution Point is 48%, reduction of unused fiber optics is from 171.23% to 39.72%, and cost efficiency is 50.39%.

ID	Presenter	Author	Title
671	I Gede Putra Kusuma Negara	Gede Putra Kusuma, Evan Kristia Wigati, Yesun Utomo, Louis Khrisna Putera Suryapranata	Analysis of Gamification Models in Education Using MDA Framework
627	Faisal	Dimas Natanael, Faisal, Dewi Suryani	Text Encryption in Android Chat Applications using Elliptical Curve Cryptography (ECC)
787	Nico Surantha	Giovanni, Nico Surantha	Design and Evaluation of Enterprise Network with Converged Services
616	Hendra	Hendra Hendra, Yulyani Arifin	Web-based Usability Measurement for Student Grading Information System
761	Siti Elda Hiererra	Denis Raskin, Alexei Vassiliev, Vasili Samarin, Diego Cabezas, Siti Elda Hiererra, Yohannes Kurniawan.	Rapid prototyping of distributed embedded systems as a part of Internet of Things

ID : 671
ANALYSIS OF GAMIFICATION MODELS IN EDUCATION USING MDA FRAMEWORK

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Abstract
Gamification nowadays is being one of techniques that can increase motivation and encourage the involvement of users, particularly in education domain that requires teaching and learning activities to be more fun and interesting. This paper surveys some analysis of gamification models. MDA framework is used to identify surveyed papers by breaking them down into three categories: mechanics, dynamics and aesthetics. Findings from the survey show there are many gamification models in education domain. However, there are some very representative gamification models could be used as a method to increase motivation, achievement and engagement in learning activities. By knowing the latest gamification models in education

domain stated in this paper, it could help gamification practitioners to make new strategies in learning activities to increase students' motivation, achievement and involvement. We also suggest some gamification strategies, which combine several mechanics in such a way to create dynamics that results in all types of aesthetics outputs.

ID : 627
Text Encryption in Android Chat Applications using Elliptical Curve Cryptography (ECC)

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Abstract
Information technology is an important aspect of human life that has provided comfort and ease in communicating. The most used communication technologies today is the smartphone, which is a mobile phone with the ability of a portable computer. Currently, to communicate each other, people feel more convenience using chat application in a smartphone than calling or short message services (SMS) features. Some of the advantages of chat application are there is no message size limitations, highest number of consumers use it; especially younger demographics, and it also works on mobile web without application download. Due to the convenience of communication using chat apps increases, the security demands are also higher, i.e., a proper cryptography scheme is needed to protect the messages. In this paper, we implement ECC algorithm to secure text message in messaging application of a smartphone. We will adopt the method proposed by Singh[1] to create a chat application in Android program that equipped end-to-end encryption. We also give the experimental result of our chat apps performance such as the accuracy of the received text message, average encryption and decryption time.

ID : 787
Design and Evaluation of Enterprise Network with Converged Services

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Abstract
The need to run various media through one infrastructure is the primary reason of the emergence of converged network. The reason is because company wants to reduce investment and maintenance cost by investing on single integrated network rather than traditional separated telecommunication, broadcasting and internet network. In this research, we use top down network design approach to create converged network design that tailored to fulfill the requirement from business and technical aspects. It is started by analyzing design requirement, perform logical and physical design, and perform design testing. Both data and voice traffic should be working well in converged network. In order to optimize the network design, the quality of service (QoS) will be considered. It will be used to accomodate various kind of traffic in this network. Simulation and experiment results show that the proposed network design can satisfy required QoS of converged service network. The proposed network design also performs better availability compared to the existing network design.

ID: 616
Web-based Usability Measurement for Student Grading Information System

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Abstract

This paper demonstrates the usability measurement of web-based student grade processing information system. The instrument used is a USE Questionnaire to obtain user satisfaction data. Atisa Dipamkara High School has been using an online application system to process the Students Grade. The application system is a web-based information system to assist the process of making the student reports every semester. This paper discusses the method of measuring the level of use of the application of student grade processing in Atisa Dipamkara High School. One factor in measuring the quality of an information system is usability. Usability level refers to the ease of use of such information systems or software. The higher the usability value means the higher the benefits of the information system in helping the users. This measurement of usability is using USE Questionnaire consisting of 3 parameters namely benefits (usefulness), ease to use and ease to learn. Data collection involves 25 teachers as user respondents of this information system. The result of usability measurement will have the value of "feasibility" and proof that there is significant influence between usefulness variable, ease to use and ease to learn to user satisfaction variable.

ID : 761
Rapid prototyping of distributed embedded systems as a part of Internet of Things

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Abstract

As the fastest growing field of information technologies, Internet of Things is the important question for embedded systems developers. The number of embedded systems in the IoT increases steadily and specialists should be able to implement it faster, without losing any quality level. Current research introduces a way to develop a system using ready-made components, configuring and integrating them among themselves, via high level API. These components represent different parts of distributed embedded system, such as control programs, communication nodes, web applications etc. Our approach presents the easy-to-understand development process, used to support students in learning of embedded systems as a part of IoT.

ID	Presenter	Author	Title
572	Bagus Sumargo	Bagus Sumargo and Theresa Novalia	Structural Equation Modelling for Determining Subjective Well-Being Factors of the Poor Children in Bad Environment
865	Meiliana	Meiliana , Irwandhi Septian, Ricky Setiawan Alianto, Daniel	Comparison Analysis of Android GUI Testing Frameworks by Using an Experimental Study
657	Ahmad Nurul Fajar	Ahmad Nurul Fajar, Aldian Nurcahyo , Septi Redisa Sriratnasari	SOA System Architecture For Interconected Modern Higher Education In Indonesia
683	Jeklin Harefa	Erika Isabela, Jennifer Drona, Nailatul Fadhilah, Dian Felita Tanoto, Jeklin Harefa , Gredion Prajena, Andry Chowanda, Alexander	NYAM: An Android Based Application for Food Finding Using GPS
542	Aryan Wibowo	diana , aryan wibowo, mohammad subekti, hendro	Building Scalable and Resilient Database System to Mitigate Disaster and Performance Risks

ID : 572

Structural Equation Modelling for Determining Subjective Well-Being Factors of the Poor Children in Bad Environment

Bagus Sumargo[a], Theresa Novalia[b]

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Abstract
Children's subjective well-being from poor families is an important policy issue because it will bring them to a positive adaptation, able to cope with stress, have a vision, good self-esteem and self-concept. The aim of this study is to determine the factors thought to influence the children'ssubjective well-being: family's socio-economic conditions and children's social emotional health. Family's socio-economic condition was thought to affect children's social emotional health. The analytical method is Structural Equation Modelling (SEM). The sample in this study was 203 poor children who live in bad environment RW 02 and RW 03, Kampung Pulo, East Jakarta. Results of SEM analysis showed that family's socio-economic conditions variable has a positive direct effect and significant to the social emotional health variable, as well as social emotional health variable has a positive direct effect and significant impact on subjective well-being of children. Family's socio-economic conditions variable has indirect effect on subjective well-being through social emotional health variable. The implication of this study is the importance of considering social emotional healthas a leverage factors, so that children can have a positive mental attitude.

ID : 865
Comparison Analysis of Android GUI Testing Frameworks by Using an Experimental Study

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Abstract
Android is the most popular mobile operating systems on the market share in 2nd Quarter 2017 Android operating system get 87.7% of mobile operating system on the market share. The mobile device Graphical user interfaces (GUI) are one of the main components to be tested for quality assurance. GUI testing is important since they often make up for half of the resource code of the application and GUI is used to interact with the application. Automating these tests is very useful since it saves a lot of time and money. However, the tools or frameworks that are available for automating the tests are often not suitable for developer needs, mainly because of the lack of functionality. Therefore, automated testing framework evaluation is needed. With a comparison study provided, developers will able to consider about testing framework that can fit their needs easily. In this study, we selected top 4 most used Android GUI testing frameworks that will be evaluated by using experimental study. Those frameworks are: Espresso, Appium, Calabash and UI Automator. We also selected the criteria used in this study to evaluate those frameworks. We selected those criteria by identified the best criteria to testing Android application base on our literature analysis. Furthermore, the study resulted in characterization of those frameworks from experiment of a simple Android application.

ID : 657
SOA System Architecture For Interconected Modern Higher Education In Indonesia

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Abstract
The transformation in education is expected to help people to have an effective and efficient learning without concerning of cost and time by using internet technologies. On the other hand, IT world levitates demand of talented employees. In current situation, modern higher education is considered inadequate to deal with the demands. Modern Education in Indonesia is encountering a complex situation for higher education. The complex ecosystem intended to deliver learning material and develop potential talent to become expertise. We proposed the SOA system architecture which create a new ecosystem based on SOA. It will give student and other stakeholders have interconnected learning systems. We proposed SOA system architecture and SOA system reference for interconnected modern higher education in Indonesia. Its purpose is being interconnection between students, lecturers/instructors, universities, financial institutions, fund institutions, and employers/industries. In the end, we should be able to create powerful tools that have seamlessly connected platform which offers a valuable service. This innovation will create a rich opportunity for enterprise and wider community which enhanced the new digital learning experience and delivers a strong talent management & recruits, knowledge engagement, skills & employability, and needs of affordable education.

ID : 683
NYAM: An Android Based Application for Food Finding Using GPS

[a]Erika Isabela, [a]Jennifer Drona, [a]Nailatul Fadhilah, [a]Dian Felita Tanoto, [a]Jeklin Harefa, [a]Gredion Prajena, [a]Andry Chowanda, [a]Alexander

[a]Computer Science Department, School of Computer Science, Bina Nusantara University, Jakarta, 11480, Indonesia

Abstract
The purpose of this research is to build an android based application to make easy to find the nearest restaurants where a user can see restaurant profiles, comments, like, amenities rating, hygiene, and services and as well as a media campaign for the restaurants. The method used is by questionnaires, interviews, observation, and literature study. The result of this research is NYAM app that can search for food based on GPS, categories, and types and this app can facilitate the search for suitable eating place where user can see restaurant profiles, comments, like, and amenities rating, hygiene, and service, as well as restaurant owners, can promote a place to eat in this application. Most of the respondents find out that the application was easy to use (94.10%), and features were easy to understand (89.1%). The majority of the respondents (84.10%) will continue to use the NYAM system because they find the NYAM system was helping them to find the best restaurant to have their meals with a decent price and have good tastes (88.40%).

ID : 542
Building Scalable and Resilient Database System to Mitigate Disaster and Performance Risks

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Abstract
This research is conducted to design database system implementation strategy that combines both backup management and performance management perspective. The backup management should address business continuity aspect and the performance management should consider its scalability factor. Methodology used is literature reviews and field studies. Result of this research is a multi-region availability database system architecture that is able to address 3 issue areas, namely regular backup, disaster recovery and performance by leveraging recent built-in database system feature. Integration of both management perspectives act as an enablement to combine cost incurred by both so that better efficiency of cost can be expected.

ID	Presenter	Author	Title
835	Syarifah Diana Permai	Syarifah Diana Permai, Heruna Tanty	Linear regression model using bayesian approach for energy performance of residential building
842	Margaretha Ohyver	Margaretha Ohyver, Herena Pudjihastuti	Arima Model for Forecasting the Price of Medium Quality Rice to Anticipate Price Fluctuations
794	Rojali	Tiffany Kassandra, Rojali, Derwin Suhartono	Resource-Constrained Project Scheduling Problem Model Application Using Firefly Algorithm Method
697	William Gunawan	William Gunawan, Derwin Suhartono , Fredy Purnomo, Andrew Ongko	Named-Entity Recognition for Indonesian Language using Bidirectional LSTM-CNNs
848	Novi Hidayat Pusponegoro	Novi Hidayat Pusponegoro, Ro'fah Nur Rachmawati	Spatial Empirical Best Linear Unbiased Prediction in Small Area Estimation of Poverty

ID : 835
Linear regression model using bayesian approach for energy performance of residential building

Syarifah Diana Permai[a]3, Heruna Tanty[b]

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Abstract
In the statistics there are two types of points of view, Frequentist and Bayesian. The difference between Frequentist and Bayesian is the point of view in terms of looking at a parameter. Bayesian views a parameter as a random variable, it means the value is not a single value. The modeling method that most commonly used by researchers is linear regression model. The Frequentist methods that are often used in linear regression are Ordinary Least Square (OLS) and Maximum Likelihood Estimation (MLE). However, along with the Bayesian development, several studies have shown better modeling results than the Frequentist method. On the other hand, Bayesian approach is also used when assumptions in linear regression model using OLS are not met. Therefore, this research performs linear regression modeling with Bayesian approach. The analysis showed that linear regression model using OLS does not met all assumptions. It means the model is not good enough. Then, Bayesian approach can be used

as an alternative for the model. The comparison of Bayesian and Frequentist modeling results using several criteria such as RMSE, MAPE and MAD. The results showed that the linear regression method using Bayesian approach is better than Frequentist method using OLS.

ID : 842
Arima Model For Forecasting The Price Of Medium Quality Rice To Anticipate Price Fluctuations

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Abstract

The objective of this study is to develop the time series model so the model can give a forecast value of rice price using ARIMA. Forecasting rice price is an action to help government in monitor and control it. Price monitoring is conducted to achieve the good development of domestic trade. In this case, price monitoring is done to maintain the price stability so that it will not harm producers and consumer**s.** The model ARIMA(1,1,2) is suitable for medium quality rice for data period from January 2015 because it has a good accuracy.

ID : 794
Resource-Constrained Project Scheduling Problem using Firefly Algorithm

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bComputer Science Department, School of Computer Science, Bina Nusantara University, Jakarta 11480, Indonesia

Abstract

This research discusses house construction project scheduling which is classified as resource-constrained project scheduling problem with fuzzy trapezoidal number expressing optimistic and pessimistic view of activity duration. Parallel schedule generation scheme is used to generate feasible scheduling solutions, while firefly algorithm is used to find optimal solution by updating priority value of each activity. A web-based application is developed to run the scheduling simulation. Scheduling simulation is conducted to determine the optimal parameter values for firefly algorithm and minimum project makespan. The optimal firefly algorithm parameter values are 10 for light absorption coefficient value, 10 for firefly population, 100 for maximal iteration, and 0.8 for random parameter. With 6 structure resources and 12 finishing resources available for construction project, the minimum project makespan value is [110, 142, 167, 224] with fuzzy magnitude value of 213.583.

ID : 697
Named-Entity Recognition for Indonesian Language using Bidirectional LSTM-CNNs

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Abstract
In this paper, we describe the implementation of Named-Entity Recognition (NER) for Indonesian Language by using various deep learning approaches, yet mainly focused on hybrid bidirectional LSTM (BLSTM) and convolutional neural network (CNN) architecture. There are already several developed NERs dedicated to specific languages such as English, Vietnamese, German, Hindi and many others. However, our research focuses on Indonesian language. Our Indonesian NER is managed to extract the information from articles into 4 different classes; they are Person, Organization, Location, and Event. We provide comprehensive comparison among all experiments by using deep learning approaches. Some discussions related to the results are presented at the end of this paper. Through several conducted experiments, Indonesian NER has successfully achieved a good performance.

ID : 848
Spatial Empirical Best Linear Unbiased Prediction in Small Area Estimation of Poverty

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Abstract
Spatial data contains of observation and region information, can describes spatial patterns such as social phenomenon or poverty. In poverty parameter estimations, the less of sample adequacy to deliver direct estimation is one of the limitation, thus the Small Area Estimation (SAE) developed to handle it. Since, the small area estimation techniques require "borrow strength" across the neighbor areas furthermore SAE was developed by integrating spatial information into the model, named as Spatial SAE. Therefore, the purpose of this paper is to compare the SAE and Spatial SAE model in order to estimate, at sub-district level, mean per capita income of each area using the poverty survey data in Bangka Belitung province at 2017 by Polytechnic of Statistics STIS. The findings of the paper is spatial information don't influence the parameter estimation in SAE.

ID	Presenter	Author	Title
836	Benfano Soewito	Benfano Soewito, Fergyanto E. Gunawanb, Hirzi, Frumentius	Prevention Structured Query Language Injection Using Regular Expression and Escape String
630	Yogi Udjaja	Yogi Udjaja	EKSPANPIXEL BLADSY STRANICA: Performance Efficiency Improvement of Making Front-End Website Using Computer Aided Software Engineering Tool
633	Cuktho	Cuk Tho, Arden Sagiterry Setiawan, Andry Chowanda	A Dataset and Preliminaries Study for Abusive Language Detection in Indonesian Social Media
653	Febryan Margali	Febryan Margali, Jude Joseph Lamug Martinez	The Design, Development and Implementation of a Platform to Host Micro Applications
758	David Brandon	Alexander A S Gunawan, David Brandon, Velinda Dwi Puspa, Budi Wiweko	Development of Urine Hydration System Based on Urine Color and Support Vector Machine

ID : 836

Prevention Structured Query Language Injection Using Regular Expression and Escape String

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Abstract

Information technology enables for new way of commerce, which is a commerce activities through online media (e-commerce). Security becomes an important issue in online-system, because such system is accessible by anyone through the global network - internet. Security in terms of confidentiality, integrity, and availability becomes goals that must be achieved by any system generally, and commerce system especially, because this kind of system contains many sensitive data like customer data and transaction data. SQL Injection is a vulnerability and threat, with the most occurrence in a web based system. In this research we evaluate and analyze source code against SQL injection, and we use regular expression and escape string to prevent the SQL injection. The results of this study are findings of system vulnerability against SQL injection, which are proven by the ability to get data from database, with SQL injection

techniques. System vulnerabilities were analyzed, in order to design and implement the solution for it. The solutions then tested, to validate that it has proven effectively fix the vulnerabilities, and can prevent the exploitation by SQL injection. In the end, the conclusion is that initially the system is vulnerable against SQL injection, but then the solution that being implemented has proven effectively fix the issue.

ID : 630
EKSPANPIXEL BLADSY STRANICA: Performance Efficiency Improvement of Making Front-End Website Using Computer Aided Software Engineering Tool

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Abstract
The purpose of this research is to create a front-end website engine to improve the efficiency of front-end website creation called Expanpixel Bladsy Stranica (EBS). The method of making front-end website engine adopts computer aided software engineering (CASE) tool model, then to make it easier to access anywhere, it is made online (website-based), and evaluated by way of manual creation of front-end website and using EBS. After that the data obtained were analyzed using statistical formula. Results of increasing efficiency of front-end website creation performance that occurred on average by 83.60% of the overall developer.

ID : 633
Forming of Dyadic Conversation Dataset for Bahasa Indonesia

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Abstract
Computer has been assisting human in almost all aspects of daily life. Despite the computer outsmart human in some tasks, it is a social ignorant tool. It does not understand and capable of doing natural conversation with human. To build a system that can naturally understand and communicate with human, it is essential to train the system with natural conversation data. This paper proposes a dataset which consists of natural dyadic conversation in Indonesian language. Where literature suggested that there are exists inadequate number of conversation dataset in Indonesian Language. There are 3164 words (formal and slang (informal non- standard words) annotated from the recording of five groups, with the largest number of words belong to Food topic (Group 3, 826 words), and the lowest one belongs to Travelling topic (Group 2, 372 words). The dataset contributes a pre-trained conversation model with deep learning (LSTM). The model is trained in 10000 iterations, 128 batches, and 4 hidden layers, resulted in a perplexity of 2.01.

ID : 653
The Design, Development and Implementation of a Platform to Host Micro Applications

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Abstract

The main purpose of creating this platform is to design a solution for helping engineers to be exposed to the ever-rising job market, while providing a streamlined solution to help companies administer programming challenges in a form of a Hackathon. The platform includes a social media web application along with, a Platform-as-a-Service (PaaS) that supports the hosting and publication of various kinds of web applications with different technology stacks. The solution tries to address the problem of overreliance of companies in competitive programming contests as the barometer of whether a candidate is qualified for a job. The research is focused on the design and development of a complete system, which can be hosted on the PaaS. The proposed solution utilizes Ruby on Rails and React for the client application, along with the deployment of a cluster of CoreOS computers used to deploy user-generated application in a performant and scalable manner. The application interactions are reduced to API call, as an adherence to micro services-based architecture to improve horizontal scalability. The application has succeeded in fulfilling all the presented requirements, with a performance that is comparably better than conventional architectural designs.

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Development of Urine Hydration System Based on Urine Color and Support Vector Machine

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Abstract

Nowadays, to maintain hydration in human body has becoming an important issue in health research. The water needs depend on many factors like body size, dietary intake, gender and physical activity, consequently the indicator of hydration status is highly individual. Based on recent research that said the urine color is reliable indicator for hydration status, we would like to develop a prototype for detecting hydration status automatically. To use the color indicator precisely, we tested several color sensors to performance in detecting color and chose TCS34725 as the color sensor. The prototype of urine hydration system (UHS) is designed to record hydration status data in daily basis in cloud computing and the urine information can be accessed by Android smartphone. The prototype employs a set of microcontrollers and sensors as IoT devices and support vector machine (SVM) as a classifier. To evaluate the accuracy of hydration status, we compared the prediction with urine specific gravity (USG) as golden standard. The accuracy of our UHS prototype can reach up to 84%, which is nearly similar with the accuracy of manual prediction using only human eyes.

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