

**Proceedings of
2017 International Conference on
Computer Science and Artificial Intelligence**

CSAI 2017

December 5-7, 2017

Jakarta, Indonesia





**The Association for Computing Machinery
2 Penn Plaza, Suite 701
New York 10121-0701**

ACM COPYRIGHT NOTICE. Copyright © 2017 by the Association for Computing Machinery, Inc. Permission to make digital or hard copies of part or all of this work for personal or classroom use is granted without fee provided that copies are not made or distributed for profit or commercial advantage and that copies bear this notice and the full citation on the first page. Copyrights for components of this work owned by others than ACM must be honored. Abstracting with credit is permitted. To copy otherwise, to republish, to post on servers, or to redistribute to lists, requires prior specific permission and/or a fee. Request permissions from Publications Dept., ACM, Inc., fax +1 (212) 869-0481, or permissions@acm.org.

For other copying of articles that carry a code at the bottom of the first or last page, copying is permitted provided that the per-copy fee indicated in the code is paid through the Copyright Clearance Center, 222 Rosewood Drive, Danvers, MA 01923, +1-978-750-8400, +1-978-750-4470 (fax).

ACM ISBN: 978-1-4503-5392-2

2017 International Conference on Computer Science and Artificial Intelligence

CSAI 2017

Table of Contents

Preface.....	viii
Conference Committees.....	ix

Machine Learning and Artificial Intelligence

Self-Augmenting Strategy for Reinforcement Learning	1
<i>Xin Huang and Shuangjiu Xiao</i>	
A Bio-Inspired Approach to Infer Functional Rules and Aesthetic Goals from Music Genre Styles	5
<i>Roberto De Prisco, Delfina Malandrino, Gianluca Zaccagnino, Rocco Zaccagnino and Rosalba Zizza</i>	
Face Recognition for Intelligent Robot Safety Verification System	10
<i>Xingqian Li, Haoyu Zhao, Hongwei Zhao, Jianjun Wang and Peijun Xia</i>	
Local Search with Configuration Checking for PBS.....	14
<i>Ridong Han, Jianjun Wang and Xingqian Li</i>	
Augmented Reality Interaction on Property Developer Using User Centered Design Approach	19
<i>Budi Arifitama, Ade Syahputra and Silvester Dian Handy Permana</i>	
Understanding Subjective Aspects in the Use of Human Computer Interface for Government Information Systems: A Reflexive Analysis	24
<i>Nayeth I. Solorzano Alcivar, Luke Houghton and Louis Sanzogni</i>	
Disambiguation of Homograms in a Pitch Accent Language.....	32
<i>Lucia Nacinovic Prskalo and Marija Brkic Bakaric</i>	

Software Design and Program Development

Loop Formulas for Alog Answer Set Programs.....	38
<i>Cuixia Li, Yisong Wang*, Renyan Feng and Qianqian Li</i>	
AR Plants: Herbal Plant Mobile Application utilizing Augmented Reality	43
<i>Jean M. Angeles, Fredilyn B. Calanda, Tony Vic V. Bayon-on, Roselia C. Morco, Junnel Avestro and Mark Jade S. Corpuz</i>	
e-RICE: An Expert System using Rule-Based Algorithm to Detect, Diagnose, and Prescribe Control Options for Rice Plant Diseases in the Philippines.....	49
<i>Roselia C. Morco, Fredilyn B. Calanda, Jonathan A. Bonilla, Mark Jade S. Corpuz, Junnel E. Avestro and Jean M. Angeles</i>	
Development of a Generator for the Research View: Research Information Relation Visualization System	55
<i>Takuma Oura, Koichi Anada, Takeo Yaku, Yasuhiko Morimoto, Shoichi Nakamura and Youzou Miyadera</i>	
The Development Framework of Expert System Application on Indonesian Governmental Accounting System.....	60
<i>Adhi Alfian</i>	
House Design Flood and Earthquake Resistant Recommender Application implementing Case-Base Content Filtering Algorithm.....	65
<i>Junnel E. Avestro, Mark Jade S. Corpuz, Roselia C. Morco, Jean M Angeles, Fredilyn B. Calanda, John Paul S. Jasmin</i>	

Image Analysis and Processing

Native Patterns Identification using Hyperrectangles	70
<i>Wladyslaw Homenda and Agnieszka Jastrzebska</i>	
Image Segmentation for One Way Video Traffic Using Background Substraction Method	76
<i>Martinus Maslim, B. Yudi Dwiandiyanta and Jourgı Epardi</i>	
Determining Pigs Breeding Time by Sow's Vagina Image Analysis Using Wavelet Transforms and Artificial Neural Network.....	80
<i>B. Yudi Dwiandiyanta, Ernawati and Martinus Maslim</i>	
Land Surface Deformation Mapping Method using PS-InSAR on ALOS/PALSAR Data in Bandung Region	84
<i>Dodi Suidiana, Antoni, Rokhmatuloh and Josaphat Tetuko Sri Sumantyo</i>	

FFT Algorithm of Complex Exponent Moments and Multi-distorted Invariance Analysis.....	90
<i>Yu Wu</i>	
Covisance: A Real Time Mobile Recolorization Tool for Aiding Color Vision Deficient Users Utilizing D-15 Color Arrangement Test.....	95
<i>Gerald R. Tecson, Fredilyn B. Calanda, Gerald T. Cayabyab and Felizardo C. Reyes Jr.</i>	
Implementation of Image Fusion Method for Watermark on Color Image Using Wavelet Transformation Domain	100
<i>Agung Mulyo Widodo and Budi Tjahjon</i>	
A Novel Three-phase Approach for Highly Corrupted Color Images.....	109
<i>Ling Zhong, Yonghui Huang and Xiangqian Xiao</i>	
Implementation of Inner Product to Analyze Digital Handwriting based on Texture Traits.....	114
<i>R. Davin RP., Dian Pratiwi, Syaifudin, Trubus R. and Rizky D.L.P.</i>	

Design and Application of Information System

Parallel Processing Design of Latent Semantic Analysis Based Essay Grading System with OpenMP	119
<i>Anak Agung Putri Ratna, Ihsan Ibrahim and Prima Dewi Purnamasari</i>	
Combination of Dimensionality Reduction and User Clustering for Collaborative-Filtering	125
<i>Ngo Tung Son, Dao Huy Dat, Nguyen Quang Trung and Bui Ngoc Anh</i>	
Maximizing Reliability of Heterogeneous Distributed System Using Bio-Inspired Technique for Task Allocation Problem	131
<i>Farid Abbache and Hamoudi Kalla</i>	
Code Recommendation with Natural Language Tags and Other Heterogeneous Data.....	137
<i>Fengyu Qiu, Weiyi Ge and Xinyu Dai</i>	
The Model of Elementary School Teachers Placement in Magelang District by Using Genetic Algorithm	143
<i>Haris Sriwindono, Paulina H. Prima Rosa, Agnes Maria Polina and Robertus Adi Nugroho</i>	
Developing Electronic Medical Record Based on NFC	148
<i>Noor Cholis Basjaruddin, Edi Rakhman, Kuspriyanto and Mikhael Bagus Renardi</i>	
eRheumatologist: Mobile-based Expert System for Rheumatology Utilizing Fuzzy Logic Algorithm	153
<i>Mark Jade S. Corpuz, Junnel Avestro, Fredilyn B. Calanda, Roselia C. Morco, Jean M. Angeles and Carl Matthew S. Alcala</i>	

Multimedia-Based Global Warming Interactive Application for Elementary School Students	158
<i>Ken Widjaja and Hadi Sutopo</i>	
Comparisons of Tidal Prediction Analysis by Using Adaptive Neuro Fuzzy Inference System (ANFIS) and Artificial Neural Network (ANN)	164
<i>Andy Hendri, S.T. M.T., Dr. Imam Suprayogi, S.T.M.T., Muhamad Zulfakar and Andarsin Ongko</i>	
Strategic Barriers in the Effective Integration of ICT in the Public Schools of Pakistan.....	169
<i>Shafaq Salam, Zeng Jianqiu, Zulfiqar Hussain Pathan and Wang Lei</i>	

Communication System and Network Security

Neighbor-Passive Monitoring Technique for Detecting Sinkhole Attacks in RPL Networks	173
<i>Mahmood Alzubaidi, Mohammed Anbar and Sabri M. Hanshi</i>	
Performance Comparison of MANET Routing Protocol based on RandomWaypoint Mobility Model	183
<i>Bekti Maryuni Susanto, Agus Hariyanto and Surateno</i>	
Improved Method of Aperiodic Spread Spectrum Acquisition.....	188
<i>Siqi Ma, Celun Liu and Jia Wang</i>	
Carrier Synchronization Based on Maximum Likelihood Criterion under High Dynamic	193
<i>Jia Wang, Celun liu and Siqi Ma</i>	
An Integrated Real-Time Simulated Ethical Hacking Toolkit with Interactive Gamification Capabilities and Cyber Security Educational Platform	199
<i>Vimalnath N. Mathoosoothenen, Jakanath S. Sundaram, Ram A. Palanichamy and Sarfraz N. Brohi</i>	
Negation of Ransomware via Gamification and Enforcement of Standards	203
<i>Yap L. Dion, Abigail A. Joshua and Sarfraz N. Brohi</i>	
Website Based Registration and Payment Information Systems at Primadia Clinic Laboratory	209
<i>Paul Clinton Pitoy and Mira Ziveria</i>	
Survey of Privacy Enabling Strategies in IoT Networks.....	216
<i>Lukáš Hellebrandt, Ondřej Hujňák, Petr Hanáček and Ivan Homoliak</i>	
A Conceptual Security Approach with Awareness Strategy and Implementation Policy to Eliminate Ransomware	222
<i>Jordan W. Han, Ong J. Hoe, Joseph S. Wing and Sarfraz N. Brohi</i>	

Analyzation of Relationships among Search Queries for Extracting the Complicated Contexts in Web Exploration.....227

Shoichi Nakamura, Takuya Matsumoto, Hiroki Nakayama, Ryo Onuma, Hiroaki Kaminaga and Youzou Miyadera

Computer Theory and Engineering Technology

The Analysis of Traffic Drivers' Behavior based on Kmeans232

Xianmei Lang, Zairang Zhao and Guixi Xiong

Failure Cause Extraction of Railway Switches Based on Text Mining.....237

*Chunni Lin and Guang Wang**

L2D: A Modified Algorithm based on Edit Distance for Searching Thai-English Transliterated Words242

Kitsiri Chochiang

Customer Oder Fulfillment Process Analysis with Process Mining: An Industrial Application in a Heavy Manufacturing Company247

Hind R'bigui and Chiwoon Cho

Quality Mapping of Senior High Schools Based On National Exam Scores and Absorption Level: A Case Study at Special Region of Yogyakarta.....253

Paulina H. Prima Rosa and Ignatius Aris Dwiatmoko

Practical Method of Low-Light-Level Binocular Ranging Based on Triangulation and Error Correction259

Qi Shi, Lei Ma and Yiping Yang

Measurement Metric Proposed For Big Data Analytics System265

Ridha Sefina Samosir, Harco Leslie Hendric, Ford Lumban Gaol, Edi Abdurachman and Benfano Soewito

Infant Body Temperature Monitoring System using Temperature Change Detection Algorithm270

*Tae-HunWoo, Hwa-Ju Jo, Yong-Hwan Lee and Sung-Young Kim**

Wind Power Prediction by Using Wavelet Decomposition Mode Based NARX-Neural Network275

A.Prasetyowati, H.Sudibyo and D.Sudiana

Design of Driving Simulator Using PID and Bidirectional Communication Control System279

Claudia Cahya Primadani, Neola Layalia Rahmah, Hajar Fadliastuti and Agus Virgono

Impulse Of Triangle and Square Wave With TENS Methode Based On Microcontroller285

Wisnu Broto, Noor Suryaningsih, Fauzie Busalim, Ane Prasetyowati

Preface

2017 International Conference on Computer Science and Artificial Intelligence (CSAI 2017) was held in Jakarta, Indonesia during December 5-7, 2017. The purpose of CSAI is to bring together researchers and people from industry working in the fields of computer science and artificial intelligence. It seeks to offer a broad spectrum of current research in this area of theoretical and applied knowledge.

The volume consists of 53 selected papers (from originally 94 papers) which are presented orally at the conference or via poster session. The topics of papers include machine learning and artificial intelligence, software design and program development, image analysis and processing, design and application of information system, communication system and network security as well as computer theory and engineering technology.

The papers are accepted after being peer-reviewed by the conference Technical Program Committee and international reviewers based on the topic of each paper. All the authors of accepted papers have done excellent presentations on this conference via oral presentation or poster presentation. On the basis of the conference achievement, we collect and compile these research papers into the conference proceedings, in which the content represents the latest international academic progress of computer science and artificial intelligence fields. We hope that the presented papers will be interesting for readers and be a good base for inspiration for future developments.

The chairpersons, keynote speakers, plenary speaker played important role in conducting the proceedings of the session in a timely and efficient manner and on behalf of the conference committee, we express sincere appreciation for their involvement. The reviewers of the manuscripts, those by tradition would remain anonymous, have also been very helpful in efficiently reviewing the manuscripts, providing valuable comments well within the time allotted to them. We express our sincere and grateful thanks to all reviewers.

We truly believe the participants will find the discussion fruitful, and will enjoy the opportunity for setting up future collaborations. It is our sincere hope that CSAI will one day become the leading conference in this specific academic area.

CSAI 2017 Organizing Committee
December 22, 2017

Committees

Conference Chairs

Prof. Nabil EL Kadhi, University of Buraimi, Sultanate of Oman

Prof. Hossein Sarrafzadeh, Unitec Institute of Technology, New Zealand

Dr. Hadi Sutopo, Dean, Kalbis Institute, Indonesia

Technical Program Committee Chairs

Assoc. Prof. Dr. Eko K. Budiardjo, University of Indonesia, Indonesia

Prof. Dr. Ir. Eko Sudiyono, Universitas Kristen Satya Wacana, Indonesia

Prof. Dr. Ir. Maria Angela Kartawidjaja, Universitas Katolik Indonesia Atma Jaya, Indonesia

Prof. Shihab A. Hameed, International Islamic University Malaysia, Malaysia

Local Organizing Committee

Dr. Hadi Sutopo, Dean, Kalbis Institute, Indonesia

Yulius Denny Prabowo, Kalbis Institute, Indonesia

Anjar Dwi Astono, Kalbis Institute, Indonesia

Jullend Gatz, Kalbis Institute, Indonesia

Technical Committee

Prof. Dr. M. Surendra Prasad Babu, Andhra University, India

Assoc. Prof. Dr. Djoko Budianto S, Universitas Atma Jaya Yogyakarta, Indonesia

Dr. Ir. Paulus Insap Santosa, Universitas Gajah Mada, Indonesia

Dr. Fuhua (Oscar) Lin, Athabasca University Alberta, Canada

Dr. KokSheik Wong, Monash University Malaysia, Malaysia

Dr. Lipur Sugiyanta, Universitas Negeri Jakarta, Indonesia

Dr. Evizal Abdul Kadir, Universitas Islam Riau, Indonesia

Dr. M. Jamal Deen, McMaster University, Canada

Dr. Sayyed Majid Mazinani, Imam Reza University, Iran

Prof. Dr. N. Ch. Sriman Narayana Iyengar, VIT University, India

Prof. Arivazhagan N, VIT University, India

Prof. & Dean. Jayantrao Bhaurao Patil, R C Patel Institute of Technology, India
Asst. Prof. Kedar Valmik Kekani, BITS Pilani India
Assoc. Prof. Shamim Ripon, East West University, Bangladesh
Dr. M.V. Siva Prasad, Anurag Engineering College, India
Asst. Prof. Atila Bostan, ATILIM UNIVERSITY, Turkey
Prof. Syed Akhter Hossain, Daffodil International University, Bangladesh
Asst. Prof. Imran Usman, Saudi Electronic University, Saudi Arabia
Prof. Dr. Abdurazzag Ali Aburas, University of KwaZulu-Natal, South Africa
Dr. Jeril Kuriakose, Manipal University Jaipur, India
Assoc. Prof. Lin Lanfen, Zhejiang University, China
Lecturer. Sarfraz Brohi, Taylor's University, Malaysia
Assoc. Prof. Anak Agung Putri Ratna, Universitas Indonesia, Indonesia
Lecturer Prima Dewi Purnamasari, Universitas Indonesia, Indonesia
Lecturer Silvester Dian Handy Permana, Universitas Trilogi, Indonesia
Lecturer Akeem Olowolayemo, University Malaysia Sarawak, Malaysia
Lecturer Bektı Maryuni Susanto, POLIJE, Indonesia
Lecturer Surateno Surateno, POLIJE, Indonesia
Asst. Prof. Agnieszka Jastrzebska, Warsaw University of Technology, Poland
Lecturer Budi Arifitama, Universitas Trilogi, Indonesia
Prof. Chiwoon Cho, University of Ulsan, Korea
Lecturer Agus Hariyanto, POLIJE, Indonesia
Assoc. Prof. Manuel Filipe Santos, University of Minho, Portugal
Asst. Prof. Gahangir Hossain, Texas A&M University, Kingsville, USA
Prof. Jianqiu Zeng, Beijing University of Posts and Telecommunication, China
Assoc. Prof. Wladyslaw Homenda, Warsaw University of Technology, Warsaw, Poland
Asst. Prof. Hamoudi Kalla, University of batna, Algeria
Asst. Prof. Marija Brkic Bakaric, University of Rijeka, Croatia
Lecturer Filipe Portela, University of Minho, Portugal
Asst. Prof. Gerald Cayabyab, Technological Institute of the Philippines - Quezon City, Philippines
Asst. Prof. Fredilyn Calanda, Technological Institute of the Philippines - Quezon City, Philippines

Asst. Prof. Felizardo Reyes Jr., Technological Institute of the Philippines - Quezon City, Philippines

Asst. Prof. Michal Kruk, Warsaw University of Life Sciences, Poland

Asst. Prof. Jaroslaw Kurek, Warsaw University of Life Sciences, Poland

Asst. Prof. Bartosz Swiderski, Warsaw University of Life Sciences, Poland