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5th International Visual Informatics Conference, IVIC 2017
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Proceedings

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Preface

The twenty-first century is a visual century. With the advent of Industry 4.0 or Fourth Industrial Revolution (4IR), visual informatics has become a crucial aspect of computer science. Specifically, it is a multidisciplinary field of computer science, information technology, and engineering, which integrates areas such as computer vision, image processing, pattern recognition, computer graphics, simulation, virtual reality, data visualization and analytics, cyber security as well as social computing, applied in various knowledge domains such as education, medical and health, finance, agriculture, and security. The Institute of Visual Informatics (IVI), Universiti Kebangsaan Malaysia (UKM) – or The National University of Malaysia – is a centre of excellence (CoE) established as an outcome of the First Visual Informatics Conference (IVIC) held in 2009. The institute, which conducts research in the aforementioned basic areas, conducts master's and doctoral (PhD) degree programs by research, as well as short professional practical certifications currently in the areas of data science and visual analytics. The institute has successfully graduated five master's and 28 PhD students since its inception in 2010 through 2017. We are indeed indebted to the international fraternity from the last four IVIC conferences (2009, 2011, 2013, and 2015), who have given us support that has resulted in the establishment of the institute. Our smart partnerships, through this conference, will not only help the institute to grow but will enhance research in this area internationally that can be applied by private organizations and governments in the respective countries.

The Visual Informatics Research Group and the Institute of Visual Informatics (IVI) at UKM once again hosted this 5th International Visual Informatics Conference (IVIC 2017), with the objective of bringing together experts to discuss and share new knowledge and ideas in this research area so that more concerted efforts can be undertaken nationally and globally. Like the previous IVIC conferences, this conference was conducted collaboratively by the visual informatics fraternity from various public and private universities and industry from different parts of the world. This fifth conference was co-sponsored by MyVIC Sdn. Bhd. (a local private company), the ICT Cluster of the National Council of Professors (MPN), the Malaysian Information Technology Society (MITS), the Malaysian Research Education Network (MyREN), the Malaysian Digital Economy Corporation (MDeC), the Malaysian Communications and Multimedia Commission (MCMC), and the Malaysian Administrative Modernization Planning Unit (MAMPU). The conference was co-chaired by six professors from UK, Ireland, Spain, Japan, Taiwan, and Malaysia.

The theme of the conference, “Visual Informatics: Changing Landscapes in 4IR Through Data-Driven Decisions” reflects the importance of big data in this fourth industrial revolution digital economy. It also portrayed the belief of the organizers (both locally and globally) of the importance of open data and sharing of big data and analytics, which would lead to the creation and innovation of new products through data-driven decisions. The changing landscapes of industry 4.0 (4IR) require

data-driven decisions be made, based on big data analytics that would allow for more comprehensive and accurate visual insights, for more precise predictions of data that would result in an efficient data-driven decision-making for economic and social good. Thus, the theme of the conference was relevant, apt, and timely.

The conference focused on four tracks — Visualization and Data-Driven Technology, Engineering and Data-Driven Innovation, Data-Driven Societal Well-Being and Applications, and Data-Driven Cyber Security — which lasted for two days (November 28 and 29, 2017) and ended with a one-day workshop (November 30, 2017). There were five keynote speakers and 68 paper presentations based on topics covered by the four main tracks. The reviewing of the papers was conducted by experts who represented the Program Committee from Asia, Europe, Oceania, and USA. Each paper was reviewed by three reviewers and the acceptance rate was 51%. The reviewing process was managed using EasyChair.

The conference also included the first meeting of a national task force on big data represented by stakeholders from the private sector, academia, and government agencies in Malaysia. The objective of the task force is to consolidate big data and big data analytics initiatives, and help the government in formulation of policies relating to BD, BDA, as well as open data. The conclusion and recommendations made by the task force will be submitted to the appropriate governing body.

On behalf of the Organizing and Program Committee of IVIC 2017, we thank all authors for their submissions and camera-ready copies of papers, and all participants for their thought-provoking ideas and active participation in the conference. We also thank the vice-chancellor of UKM (host university), and the vice-chancellors and deans of all IT faculties of the IHLs for their support in organizing this conference. We also acknowledge the sponsors, members of the Organizing Committees, Program Committee members, support committees, and individuals who gave their continuous help and support in making the conference a success. IVIC has grown from strength to strength and it is our fervent hope that it can one day be held in different host countries in Asia, Europe, Oceania, the UK or the USA.

November 2017

Halimah Badioze Zaman
Peter Robinson
Alan Smeaton
Timothy Shih
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Tada Terutoshi
Azizah Jaafar
Nazlena Mohamad Ali

Organization

The 5th International Visual Informatics Conference (IVIC 2017) was organized by the Visual Informatics Research Group and Institute of Visual Informatics, Universiti Kebangsaan Malaysia (UKM), in collaboration with 18 local public and private universities in Malaysia, the Malaysian Information Technology Society (MITS), the Multimedia Development Corporation (MDeC), the Malaysian Research Educational Network (MyREN), and the ICT Cluster of the National Professors' Council (MPN).

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Contents

Keynote

- Vehicle Detection Using Alex Net and Faster R-CNN Deep Learning Models: A Comparative Study. 3
Jorge E. Espinosa, Sergio A. Velastin, and John W. Branch

Visualisation and Data Driven Technology

- Improvement on the Efficiency of Technology Companies in Malaysia with Data Envelopment Analysis Model. 19
Lam Weng Hoe, Lam Weng Siew, and Liew Kah Fai

- Visualization Principles for Facilitating Strategy Development Process in the Organization 31
Suraya Ya'acob, Nazlena Mohamad Ali, Hai-Ning Liang, Norziha Megat Zainuddin, and Nor Shita Mat Nayan

- Analysis of Visually Impaired Users' Navigation Techniques in Complex and Non-complex Layout by Using Spectrum. 43
Bavani Ramayah and Azizah Jaafar

- DengueViz: A Knowledge-Based Expert System Integrated with Parallel Coordinates Visualization in the Dengue Diagnosis. 50
Jodene Yen Ling Ooi and J. Joshua Thomas

- Intake and Preparation of Malay Confinement Dietary Ontology Framework. 62
Nur Liyana Lazim, Muhammad Hamiz Mohd Radzi, Haryani Haron, and Mohammad Bakri Che Haron

- Hybrid Improved Bacterial Swarm (HIBS) Optimization Algorithm. 71
K. Shanmugasundaram, A.S.A. Mohamed, and N.I.R. Ruhaiyem

- Towards Big Data Quality Framework for Malaysia's Public Sector Open Data Initiative 79
Mohamad Taha Ijab, Azlina Ahmad, Rabiah Abdul Kadir, and Suraya Hamid

- Bridging the Gap in Personalised Medicine Through Data Driven Genomics 88
Ummul Hanan Mohamad, Mohamad Taha Ijab, and Rabiah Abdul Kadir

Using Data Mining Strategy in Qualitative Research	100
<i>Nadhirah Rasid, Puteri N.E. Nohuddin, Hamidah Alias, Irna Hamzah, and A. Imran Nordin</i>	
An Integrated Social Media Trading Platform for B40 Social Media Entrepreneurship	112
<i>Johnlee Jumin, Mohamad Taha Ijab, and Halimah Badioze Zaman</i>	
Association Rule Mining Using Time Series Data for Malaysia Climate Variability Prediction	120
<i>Rabiatul A.A. Rashid, Puteri N.E. Nohuddin, and Zuraini Zainol</i>	
An Ontology-Based Hybrid Recommender System for Internet Protocol Television	131
<i>Mohammad Wahiduzzaman Khan, Gaik-Yee Chan, Fang-Fang Chua, and Su-Cheng Haw</i>	
Self-Regulated Learning and Online Learning: A Systematic Review	143
<i>Noor Latiffah Adam, Fatin Balkis Alzahri, Shaharuddin Cik Soh, Nordin Abu Bakar, and Nor Ashikin Mohamad Kamal</i>	
A Hybrid Model of Differential Evolution with Neural Network on Lag Time Selection for Agricultural Price Time Series Forecasting	155
<i>Chen ZhiYuan, Le Dinh Van Khoa, and Lee Soon Boon</i>	
Identifying the Qur’anic Segment from Video Recording	168
<i>Haslizatul Mohamed Hanum, Norizan Mat Diah, and Zainab Abu Bakar</i>	
Document Clustering in Military Explicit Knowledge: A Study on Peacekeeping Documents.	175
<i>Zuraini Zainol, Syahaneim Marzukhi, Puteri N.E. Nohuddin, Wan M.U. Noormaanshah, and Omar Zakaria</i>	
Analysis of Learning Analytics in Higher Educational Institutions: A Review	185
<i>Sarraaf Rajesh Kumar and Suraya Hamid</i>	
Data-Driven Iterative-Evolution-Participatory Design Model on Motion-Based Science Educational Application for ADHD Learners	197
<i>Ahmad Fazil Zainal and Halimah Badioze Zaman</i>	
Food Category Recognition Using SURF and MSER Local Feature Representation.	212
<i>Mohd Norhisham Razali, Noridayu Manshor, Alfian Abdul Halin, Razali Yaakob, and Norwati Mustapha</i>	
Motivation Design Methodology for Online Knowledge Sharing Interface . . .	224
<i>Prasanna Ramakrisnan and Azizah Jaafar</i>	

Review on Data Driven Preliminary Study Pertaining to Assistive Digital Learning Technologies to Support Dyscalculia Learners 233
Kohilah Miundy, Halimah Badioze Zaman, and Aliimran Nordin

Engineering and Data Driven Innovation

Image Enhancement Based on Fractional Poisson for Segmentation of Skin Lesions Using the Watershed Transform 249
Alaa Ahmed Abbas Al-abayechi, Hamid A. Jalab, Rabha W. Ibrahim, and Ali M. Hasan

A Simulation Study of Micro-Drone Chemical Plume Tracking Performance in Tree Farm Environments 260
Kok Seng Eu, Kian Meng Yap, and Wan Chew Tan

Similarity Assessment of UML Sequence Diagrams Using Dynamic Programming 270
Alhassan Adamu and Wan Mohd Nazmee Wan Zainon

An Automated Image-Based Approach for Tracking Pedestrian Movements from Top-View Video 279
Halimatul Saadiah Md. Yatim, Abdullah Zawawi Talib, and Fazilah Haron

Exploratory Research on Application of Different Vision System on Warehouse Robot Using Selective Algorithm 290
Wan Chew Tan and Kian Meng Yap

Travel Route Recommendation Based on Geotagged Photo Metadata 297
Ching May Lee and J. Joshua Thomas

Predicting Traffic Flow Based on Average Speed of Neighbouring Road Using Multiple Regression 309
Bagus Priambodo and Azlina Ahmad

People Detection and Pose Classification Inside a Moving Train Using Computer Vision 319
Sergio A. Velastin and Diego A. Gómez-Lira

A Conceptual Design of Spatial Calibration for Optical See-Through Head Mounted Display Using Electroencephalographic Signal Processing on Eye Tracking 331
Azfar Tomi and Dayang Rohaya Awang Rambli

Review of Spatial and Non-spatial Data Transformation to 3D Geovisualization for Natural Disaster 340
Muhammad Yudhi Rezaldi, Rabiah Abdul Kadir, Mohamad Taha Ijab, and Azlina Ahmad

Face Recognition with Real Time Eye Lid Movement Detection	352
<i>Syazwan Syafiqah Sukri, Nur Intan Raihana Ruhaiyem, and Ahmad Sufri Azlan Mohamed</i>	
Action Key Frames Extraction Using L1-Norm and Accumulative Optical Flow for Compact Video Shot Summarisation	364
<i>Manar Abduljabbar Ahmad Mizher, Mei Choo Ang, Siti Norul Huda Sheikh Abdullah, and Kok Weng Ng</i>	
Mandarin Language Learning System for Nasal Voice User	376
<i>Thagirarani Muniandy, Thamilvaani Arvaree Alvar, and Chong Jiang Boon</i>	
Data Driven Societal Well-being and Applications	
User Experience of Autism Social-Aid Among Autistic Children: AUTISM Social Aid Application	391
<i>Iman Nur Nabila Ahmad Azahari, Wan Fatimah Wan Ahmad, Ahmad Sobri Hashim, and Zulikha Jamaludin</i>	
Guideline for the Development of Instructional Media with DST Concept on Touch Screen Tablet	398
<i>Hashiroh Hussain and Norshuhada Shiratuddin</i>	
Preliminary Investigations on Augmented Reality for the Literacy Development of Deaf Children	412
<i>Aziza Almutairi and Shiroq Al-Megren</i>	
Understanding the Atmospheric Cues Effects on Consumer Emotions: A Case Study on Lazada Malaysia	423
<i>Saliza Aksah, Jamaliah Taslim, Maslina Abdul Aziz, Paezah Hamzah, Norehan Abdul Manaf, and Zan Azma Nasruddin</i>	
Integrating Learning Techniques into iCAL4LA-Bijak Matematik Courseware to Motivate Low Achieving Children in Learning	433
<i>Siti Zulaiha Ahmad and Ariffin Abdul Mutalib</i>	
MyRedList: Virtual Application for Threatened Plant Species	445
<i>Norul Maslissa Ahmad, Nazlena Mohamad Ali, and Hanif Baharin</i>	
Reward Conditions Modify Children’s Drawing Behaviour.	455
<i>Siti Rohkmah Mohd Shukri and Andrew Howes</i>	
Advances in Mobile Augmented Reality from User Experience Perspective: A Review of Studies	466
<i>Shafaq Irshad and Dayang Rohaya Awang Rambli</i>	

Exploring Malay Older User Motivation to Play Mobile Games	478
<i>Fariza Hanis Abdul Razak, Nor Haizam Che Azhar, Wan Adilah Wan Adnan, and Zan Azma Nasruddin</i>	
Utilizing Mobile Application for Reducing Stress Level.	489
<i>Aslina Baharum, Nurhafizah Moziyana Mohd Yusop, Ratna Zuarni Ramli, Noor Fazlinda Fabeil, Sharifah Milda Amirul, and Suhaida Halamy</i>	
Game Interface Design: Measuring the Player’s Gameplay Experience.	500
<i>Ibrahim Ahmad, Erman Hamid, Nazreen Abdullasim, and Azizah Jaafar</i>	
Measuring the Variabilities in the Body Postures of the Children for Early Detection of Autism Spectrum Disorder (ASD).	510
<i>Ahmed Danial Arif Yaakob and Nur Intan Raihana Ruhaiyem</i>	
EduNation Malaysia: Closing the Socio-Economic Educational Achievement Gap Through Free Online Tutoring Videos	521
<i>Jasbirizla Ilia Zainal Abidin and Hanif Baharin</i>	
Development of Questionnaire to Measure User Acceptance Towards User Interface Design	531
<i>Aslina Baharum, Sharifah Milda Amirul, Nurhafizah Moziyana Mohd Yusop, Suhaida Halamy, Noor Fazlinda Fabeil, and Ratna Zuarni Ramli</i>	
The Effect of Time Manipulation on Immersion in Digital Games.	544
<i>Mohd Hafiz Abd Rahman, A. Imran Nordin, and Alena Denisova</i>	
Understanding Hospitalized Pediatric Cancer Patients’ Activities for Digital Games Design Requirements.	552
<i>Irna Hamzah, A. Imran Nordin, Nadhirah Rasid, and Hamidah Alias</i>	
Designing Persuasive Stroke Rehabilitation Game: An Analysis of Persuasion Context	559
<i>Mohd Yusoff Omar, Dayang Rohaya Awang Rambli, and Mohd Fairuz Shiratuddin</i>	
Designing an Interactive Mural for Cultural Reflections	570
<i>Wei Hong Lo and Kher Hui Ng</i>	
Visual Object Interface Signifier of Museum Application for Large Display . . .	582
<i>Fasihah Mohammad Shuhaili, Suziah Sulaiman, Saipunidzam Mahamad, and Aliza Sarlan</i>	
Mathematics Education and Accessible Technologies for Visually Impaired Students in Bangladesh	592
<i>Lutfun Nahar, Azizah Jaafar, and Riza Sulaiman</i>	

Designing an Interactive Learning to Enrich Children’s Experience in Museum Visit.	601
<i>Zamratul Asyikin Amran and Novia Admodisastro</i>	
Natural User Interface for Children: From Requirement to Design.	612
<i>Mohd Salihan Ab Rahman, Nazlena Mohamad Ali, and Masnizah Mohd</i>	
Improving Usability with TRIZ: A Review.	625
<i>Vanisri Batemanazan, Azizah Jaafar, Rabiah Abdul Kadir, and Norshita Mat Nayan</i>	
An Evaluation of Player Enjoyment in Game-Based Learning Arithmetic Drills via Racing Game	636
<i>Nurul Hidayah Mat Zain, Razuan Harmy Johar, Azlan Abdul Aziz, Aslina Baharum, Azizah Jaafar, and Anita Mohd Yasin</i>	
Technological Intervention for Moral Education Among Teenagers: A Review	647
<i>Sitti Hutari Mulyani, Billy Hendrik, Muhammad Reza Putra, Gushelmi, Emil Naf’an, Nazlena Mohamad Ali, and Khaidzir Ismail</i>	
Data Driven Cyber Security	
IPv6 OS Fingerprinting Methods: Review	661
<i>Omar E. Elejla, Bahari Belaton, Mohammed Anbar, and Basem O. Alijla</i>	
Body Matching Algorithm Using Normalize Dynamic Time Warping (NDTW) Skeleton Tracking for Traditional Dance Movement.	669
<i>A.S.A. Mohamed, P.S. Chingeng, N.A. Mat Isa, and S.S. Surip</i>	
Data Driven Decision Analysis in Bank Financial Management with Goal Programming Model.	681
<i>Lam Weng Siew, Chen Jia Wai, and Lam Weng Hoe</i>	
Investigating Blind User Preference on Tactile Symbols for Landmarks on Audio-Tactile Map	690
<i>Nazatul Naqiah Ahba Abd Hamid, Fariza Hanis Abdul Razak, and Wan Adilah Wan Adnan</i>	
An Improved Robust Image Watermarking Scheme Based on the Singular Value Decomposition and Genetic Algorithm	702
<i>Atheer Bassel, Md Jan Nordin, and Mohammed B. Abdulkareem</i>	
Methods of Evaluating the Usability of Human- Computer Interaction (HCI) Design in Mobile Devices for SAR Operation	714
<i>Nur Syafikin Shaheera Mat Zaini, Syed Nasir Alsagoff Syed Zakaria, and Norshahriah Wahab</i>	

Knowledge Driven Interface to Determine Degree of Exposure
of Young Adult to Pedophile Online 727
*Mat Razali Noor Afiza, Nurjannatul Jannah Aqilah Md Saad,
Nor Asiakin Hasbullah, Norulzahrah Mohd Zainudin, Suzaimah Ramli,
Norshahriah Wahab, Mohd Nazri Ismail,
and Mohd Fahmi Mohamad Amran*

Smart-Learning Networked Controllers for Centralized
Air-Conditioning Systems Using Model-View-Controller Model 737
Tran Trong Tin, Chen Zhi Yuan, and K.R. Selvaraj

Analyzing and Detecting Network Intrusion Behavior
Using Packet Capture 750
Zahidan Zabri and Puteri N.E. Nohuddin

Author Index 763