ICACTE 2019
2019 12th International Conference on
Advanced Computer Theory and Engineering

MLMI 2019
2019 2nd International Conference on
Machine Learning and Machine Intelligence

Jakarta, Indonesia | September 18–20, 2019

Co-organized by

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WWW.IACSIT.ORG

KALBIS Institute
Science • Technology • Business

UNIVERSITAS
ATMA JAYA YOGYAKARTA

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# AGENDA OVERVIEW

## September 18, 2019 (Wednesday)

<table>
<thead>
<tr>
<th>Location</th>
<th>Time</th>
<th>Event</th>
</tr>
</thead>
<tbody>
<tr>
<td>In front of the Glory 1 (6F)</td>
<td>10:00-13:00</td>
<td>Registration &amp; Materials Collection</td>
</tr>
<tr>
<td>Kalbis Institute</td>
<td>13:30-17:00</td>
<td>Opening Ceremony &amp; Academic Visit</td>
</tr>
</tbody>
</table>

## September 19, 2019 (Thursday)

### Morning

<table>
<thead>
<tr>
<th>Location</th>
<th>Time</th>
<th>Event</th>
</tr>
</thead>
<tbody>
<tr>
<td>Glory 1 (6F)</td>
<td>08:30-09:30</td>
<td>Registration &amp; Materials Collection</td>
</tr>
<tr>
<td></td>
<td>09:30-09:40</td>
<td>Announcement</td>
</tr>
<tr>
<td></td>
<td>09:40-10:20</td>
<td>Keynote Speech I</td>
</tr>
<tr>
<td></td>
<td>10:20-10:50</td>
<td>Group Photo &amp; Coffee Break</td>
</tr>
<tr>
<td></td>
<td>10:50-11:30</td>
<td>Keynote Speech II</td>
</tr>
<tr>
<td></td>
<td>11:30-12:00</td>
<td>Invited Speech</td>
</tr>
<tr>
<td>Restaurant</td>
<td>12:00-13:30</td>
<td>Lunch</td>
</tr>
</tbody>
</table>

### Afternoon

<table>
<thead>
<tr>
<th>Location</th>
<th>Time</th>
<th>Event</th>
</tr>
</thead>
<tbody>
<tr>
<td>Glory 1 (6F)</td>
<td>13:30-15:15</td>
<td>Session I: Computer and Information System</td>
</tr>
<tr>
<td></td>
<td>15:15-15:30</td>
<td>Coffee Break</td>
</tr>
<tr>
<td></td>
<td>15:30-18:00</td>
<td>Session II: Data Analysis and Data Processing</td>
</tr>
<tr>
<td>Restaurant</td>
<td>18:00-20:00</td>
<td>Dinner</td>
</tr>
</tbody>
</table>

## September 20, 2019 (Friday)

<table>
<thead>
<tr>
<th>Location</th>
<th>Time</th>
<th>Event</th>
</tr>
</thead>
<tbody>
<tr>
<td>Jakarta, Indonesia</td>
<td>09:00-17:00</td>
<td>Social Program</td>
</tr>
</tbody>
</table>
Hotel Ciputra Jakarta

Website: [https://www.hotelciputra.com/](https://www.hotelciputra.com/)
Add: Jalan Letnan Jenderal S. Parman, Jakarta, 11470, Indonesia

How to get to the Hotel Ciputra Jakarta from Soekarno-Hatta International Airport?

- The fastest way: **Taxi**
  
  ![Taxi](Taxi.png)
  
  Taxi------Around 50 minutes

- The economical way: **KA Bandara→Tangerang line→Walking**
  
  ![Bus](Bus.png)
  
  Bus+  Walking------ Around one hour

Get on the **KA Bandara** at the Soekarno-Hatta Airport Railway Station
↓
Get off at **Batu Ceper Station**
↓
Get on the **Tangerang line** (7 Stations)
↓
VENUE

Get off at Grogol Station

Walking to Hotel Ciputra Jakarta (1.2KM)

TIPS:

Weather

High Temperature: 33°C
Low Temperature: 26°C

Important Phone Numbers

Police - General Emergencies: 110
Ambulance and Rescue: 118
Fire: 113
Tourist Police (Jakarta): (021) 526 4073

Time Zone: GMT+8

Currency: Indonesian Rupiah

Weather

High Temperature: 33°C
Low Temperature: 26°C

Important Phone Numbers

Police - General Emergencies: 110
Ambulance and Rescue: 118
Fire: 113
Tourist Police (Jakarta): (021) 526 4073

Time Zone: GMT+8

Currency: Indonesian Rupiah
DETAILED AGENDA

[September 18, 2019]

10:00-13:00

Registration & Materials Collection

In front of the Glory 1 (6F)

Give your Paper ID and to the staff.

(* Please show your acceptance letter / passport so that the staff could confirm your identity.)

Sign your name in the attendance list and check the paper information.

Check your conference kit, which includes conference bag, name tag, lunch & dinner coupon, conference program, the receipt of the payment, the USB of paper collection and a pen.

Tips for Participants

✧ Your punctual arrival and active involvement in each session will be highly appreciated.
✧ The listeners are welcome to register at any working time during the conference.
✧ Get your presentation PPT or PDF files prepared.
✧ Regular oral presentation: 15 minutes (including Q&A).
✧ Laptop (with MS-Office & Adobe Reader), projector & screen, laser pointer will be provided by the conference organizer.
✧ For personal and property safety, only the person wearing the name tag could enter the conference rooms.
DET AILED AGENDA

[September 18, 2019]
13:30-17:00

Opening Ceremony & Academic Visit
Kalbis Institute

Assembly Point: Lobby of Hotel Ciputra Jakarta | Pick-up time: 13:30
* Please meet us in the Lobby of Hotel Ciputra Jakarta before 13:20

<table>
<thead>
<tr>
<th>Time</th>
<th>Activity</th>
</tr>
</thead>
<tbody>
<tr>
<td>13:30 – 15:00</td>
<td>Pick up participants from Hotel Ciputra Jakarta to Kalbis Institute</td>
</tr>
<tr>
<td>15:00 – 15:30</td>
<td>Traditional dance by Kalbis Institute students</td>
</tr>
<tr>
<td>15:30 – 15:45</td>
<td>Welcome Speech – Rector of Kalbis Institute</td>
</tr>
<tr>
<td>15:45 – 16:00</td>
<td>Speech – Conference Chair&lt;br&gt;Opening Ceremony – Conference Chair and Rector of Kalbis Institute</td>
</tr>
<tr>
<td>16:00 – 16:15</td>
<td>Coffee Break</td>
</tr>
<tr>
<td>16:15 – 17:00</td>
<td>Academic Visit &amp; Warm up Program</td>
</tr>
<tr>
<td>17:00</td>
<td>Drop participants to Hotel Ciputra Jakarta</td>
</tr>
</tbody>
</table>
## DETAILED AGENDA

[September 19, 2019]

### Morning

#### Opening & Keynote Speeches & Invited Speech

- **Glory 1 (6F)**

<table>
<thead>
<tr>
<th>Time</th>
<th>Session</th>
<th>Speaker Details</th>
</tr>
</thead>
</table>
| 09:30-09:40 | Announcement                 | **Dr. Hadi Sutopo**  
Kalbis Institute, Indonesia |
| 09:40-10:20 | Keynote Speech I            | **Prof. James Tin-Yau Kwok**  
Hong Kong University of Science and Technology  
**Speech Title:** Compressing Deep Neural Networks |
| 10:20-10:50 | Coffee Break & Group Photo | **Poster Display**  
A1005 |
| 10:50-11:30 | Keynote Speech II           | **Prof. Jianjun Li**  
Hangzhou Dianzi University, China  
**Speech Title:** Gaze Estimation and Eye Track with CNN Networks |
| 11:30-12:00 | Invited Speech              | **Assoc. Prof. Jarot S. Suroso**  
Bina Nusantara University, Indonesia  
**Speech Title:** Monitoring and Evaluation of Information System of Soybean Based on SMS Gateway to Support Early Warning System of Soybean Production |

### Lunch

*Lunch @ Restaurant*  
<12:00-13:30>

**Note:** Lunch coupon is needed for entering the restaurant.
### Detailed Agenda

#### September 19, 2019

**Afternoon**

### Parallel Sessions

#### Glory 1 (6F)

<table>
<thead>
<tr>
<th>Time</th>
<th>Session I - Computer and Information System</th>
</tr>
</thead>
<tbody>
<tr>
<td>13:30-15:15</td>
<td>Chaired by Prof. I-Shyan Hwang</td>
</tr>
<tr>
<td></td>
<td>Yuan Ze University, Taiwan</td>
</tr>
<tr>
<td></td>
<td>7 Presentations</td>
</tr>
<tr>
<td></td>
<td>A3006, A3010, A1010, A1012, A1022, A3017, A3025</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Time</th>
<th>Coffee Break</th>
</tr>
</thead>
<tbody>
<tr>
<td>15:15-15:30</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Time</th>
<th>Session II - Data Analysis and Data Processing</th>
</tr>
</thead>
<tbody>
<tr>
<td>15:30-18:00</td>
<td>Chaired by Prof. Yoshihiro Mitani</td>
</tr>
<tr>
<td></td>
<td>National Institute of Technology, Ube College, Japan</td>
</tr>
<tr>
<td></td>
<td>10 Presentations</td>
</tr>
<tr>
<td></td>
<td>A3018, A3008, A3005, A3022, A1009, A1021, A1019, A3019, A3021, A3024</td>
</tr>
</tbody>
</table>

**Dinner @ Restaurant**

*<18:00-20:00>*

**Note:** Dinner coupon is needed for entering the restaurant.
DETAILED AGENDA

[September 20, 2019]
09:00-17:00

Social Program

※ Assembly Time: 08:50
Assembly Point: Lobby of Hotel Ciputra Jakarta

※ Overview
Jakarta is a great place to learn more about Indonesia’s complicated history, variety of culture and unique heritage of Indonesia. There are many historical places that prove that Indonesia’s great history took place in Jakarta. The historical tour presents the uniqueness of Jakarta City with various kinds of history, culture and tradition.

※ Included
- Bottled water
- Air-conditioned vehicle
- Private transportation

※ Not Included
- Lunch and Dinner
- Personal expenses such as souvenirs

※ Note
- This social program is optional and chargeable.
- If you are interested, please give your feedback before September 10. If you miss this date, we can’t accept your request anymore.
Dear distinguished delegates,

It is our great honor and pleasure to welcome you to 2019 12th International Conference on Advanced Computer Theory and Engineering (ICACTE 2019) and 2019 2nd International Conference on Machine Learning and Machine Intelligence (MLMI 2019) which will be held in Jakarta, Indonesia during September 18-20, 2019.

The evaluation of all the papers was performed based on the reports from anonymous reviewers, who are qualified in the field of Advanced Computer Theory and Engineering, Machine Learning and Machine Intelligence. As a result of their hard work, we are pleased to have accepted 18 presentations (including one poster presentation) in this program. The presentations are divided into 2 breakout sessions with topics including Computer and Information System, Data Analysis and Data Processing.

A word of special welcome is given to our keynote speakers and invited speaker who are pleased to make contributions to our conference and share their new research ideas with us. They are Prof. James T. Kwok from Hong Kong University of Science and Technology; Prof. Jianjun Li from Hangzhou Dianzi University, China and Assoc. Prof. Jarot S. Suroso from Bina Nusantara University, Indonesia. Besides keynote speeches, invited speech and parallel sessions, our conference is also highlighted by the Opening Ceremony & Academic Visit in the Kalbis Institute in the afternoon of September 18.

We’d like to express our heartfelt appreciation to our chairs, sponsors, technical program committee members, organizing committee members, authors and delegates, who made a lot of efforts and contributions year by year. Thanks to your support and help, we can hold this conference successfully and always keep making progress.

We believe that by this excellent conference, you can get more opportunity for further communication with researchers and practitioners with the common interest in this field. And your suggestions are warmly welcomed for the further development of the conferences in the future. Wish you have a fruitful and memorable experience in Jakarta, Indonesia.

We look forward to meeting you again next year.

Yours sincerely,
Conference Organizing Committee
Prof. James T. Kwok (IEEE Fellow)
Hong Kong University of Science and Technology

Prof. Kwok is a Professor in the Department of Computer Science and Engineering, Hong Kong University of Science and Technology. He received his B.Sc. degree in Electrical and Electronic Engineering from the University of Hong Kong and his Ph.D. degree in computer science from the Hong Kong University of Science and Technology. Prof. Kwok served/is serving as an Associate Editor for the IEEE Transactions on Neural Networks and Learning Systems, Neurocomputing and the International Journal of Data Science and Analytics. He is an IEEE Fellow.

Speech Title--- Compressing Deep Neural Networks

Speech Abstract---Deep neural networks have been hugely successful in various domains, such as computer vision, speech recognition, and natural language processing. Though powerful, the large number of network weights leads to space, time and energy inefficiencies in both training and inference. In this talk, we will discuss recent attempts that try to reduce the model size. These include sparsification, quantization with fewer number of bits, low-rank approximation, distillation, and neural architecture search. They can greatly reduce the network size, and allow deployment of deep models in resource-constrained environments, such as embedded systems, smart phones and other portable devices.
Prof. Jianjun Li
Hangzhou Dianzi University, China

Prof. Jianjun Li received the PhD degree in Electrical and Computer Engineering from Windsor University, Canada. He is now serving as a chair professor of School of Computer Science and Technology in Hangzhou Dianzi University. He is also the director of Institute of Graphic and Image. Before this, Dr. Li worked in National Audiology Center (NCA) of Canada from 2003 to 2005, Mitsubishi Electronics Research Laboratory (MERL) of U.S.A from 2005 to 2006, École polytechnique fédérale de Lausanne (EPFL) of Switzerland from 2006 to 2007 as a visiting scholar. He worked in Ambroda Ltd. for video coding stream processing of U.S.A from 2007 to 2010 as a senior engineer. From 2010 to 2012, Dr. Li worked as an assistant professor in Bilkent University and Ankara University, Turkey. In the meantime, he worked for FP-7 (now Horizon 2020) 3D project as a research fellow. Professor Li has worked in many different topics in computer vision, multimedia image processing, video coding and deep learning and published more than 50 papers in international conferences and journals and 2 books. He also has 3 contributions adopted by ISO/IEC Movie Picture Experts Group (MPEG) as a part of Reconfigurable Video Coding (RVC) standard. Dr. Li worked with International Institutes and Enterprises for more than 10 projects during his stay in abroad for more than 10 years. He now works on the National Science Foundation (NSFC) of China, National institutes and other Enterprises on more than 20 projects and holds 20 patents.

Professor Li is also the recipient of several awards, including the “Qianjiang” scholar and the chief scientist of the innovation team of Zhejiang province in “3D industry and technology application”. Meanwhile, he is also a reviewer of many international journals and hold keynote speaker and committee member of many international conferences.

Speech Title--- Gaze Estimation and Eye Track with CNN Networks

Speech Abstract--- Eye tracking and gaze estimation can improve the lives of people in many aspects, for example, people with motor disabilities by providing an intuitive and convenient input method, or provide detailed insights into users' attention. Also, gaze estimation in a non-intrusive manner can make human-computer interaction more natural, so it is also used in activity recognition, game and human-computer interaction, etc... Traditionally, eye tracking devices are expensive and have dedicated hardware, such as Tobii, Eyelink, SMI and so on. It has more needs for estimating gaze direction only from a low-resolution image of eyes. The difficulty of this task increases with background noise, less ideal illumination conditions, ambiguity, motion blur and a smaller number of pixels in determining the extent of the eyeball or shape of the iris. To determine the direction of gaze under the challenges: (1) low sensor quality or unknown/challenging environments, (2) large variations in eye region appearance, (3) lacking context or sense of distance/depth, and (4) physical differences between individuals, variations in head pose, or situational changes in decorations such as eyeglasses or cosmetics. It is appealing to adopt convolutional neural networks (CNN) with large amounts of data to solve the task of eye gaze direction estimation. Several datasets and works have been introduced in recent years.
Dr. Ir. Jarot S. Suroso, M.Eng., Associate Professor of Magister Management of Information System at Bina Nusantara University Jakarta, Indonesia. Doctor of education from Jakarta State University, Indonesia and also Doctoral Sandwich of Competitive Intelligence from Aix Marseille University France. He is graduated from master degree of Ecole Superieire d’Ingenieur de Marseille France. He got his undergraduate from Elektrotechnique Department Hasanuddin University, Makassar Indonesia. His major research interests include management information system, competitive intelligence, distance education, knowledge management, computer network, e-learning, multimedia and research methodology. He wrote several texbooks such as: Strategic Knowledge Management, Information Systems Leadership, Information System Quality Assurance and Control also Multimedia System. He has 6 Intellectual Capital from Directorate General of Intellectual Property. Now he has 25 papers, published and indexed by scopus. This year he has several researchs such as Implementation of Knowledge Management, Development of Monitoring and Evaluation System for Agriculture and also Implementation of Quadcopter Drone for Emergency Situation.

Speech Title--- Monitoring and Evaluation of Information System of Soybean Based on SMS Gateway to Support Early Warning System of Soybean Production

Speech Abstract--- Development of Monitoring Information System Evaluation of Soybean Based on SMS Gateway to Support Early Warning System Soybean Production aims to assist data collection officers in the field to help monitor the area of cultivation, harvested area, and soybean productivity at village, sub-district, district and province levels. This system is needed to replace the old system that still uses manual correspondence. This Information System Development using System Development Life Cycle (SDLC) method. Using the Monitoring Information System of Evaluation of Soybean Cultivation Based on SMS Gateway can improve the quality and control of monitoring, evaluation, transparency, and help policy makers to take decisions to support the Early Warning System of Soybean Production.
SESSION I

September 19, 2019

Session I

[Computer and Information System]

🕒 13:30-15:15
📍 Glory 1 ( 6F )

Chaired by Prof. I-Shyan Hwang
Yuan Ze University, Taiwan

7 Presentations—
A3006, A3010, A1010, A1012, A1022, A3017, A3025

*Note:

- Please arrive 30 minutes ahead of the sessions to prepare and test your PowerPoint.
- Certificate of Presentation will be awarded to each presenter by the session chair when the session is over.
- One Best Presentation will be selected from each parallel session and the author of best presentation will be announced and awarded when the session is over.
### SESSION I

<table>
<thead>
<tr>
<th>Session ID</th>
<th>Title</th>
<th>Authors</th>
<th>Abstract</th>
</tr>
</thead>
<tbody>
<tr>
<td>A3006</td>
<td>Finding the Unique Permutation Matrix for Reverse Order Kronecker Product Intuitively</td>
<td>Muhammad G. Ali, Shoab A. Khan and Sajid G. Khawaja</td>
<td>Abstract---With the adverse research in field of engineering and technology, the use of Kronecker product highlighted from many aspects by researchers in different fields of science, especially considering digital signal processing where Discrete Fourier Transform plays a supreme role. This transform can be performed using Kronecker product in an iterative way. The implementation of DFT using this product needs a reverse order multiplication that can easily be catered for by applying few techniques of linear algebra i.e. by using a unique permutation matrix, on the original Kronecker Product. The permutation matrix obtained from “I” interchanging of rows / columns from an identity matrix. A total of n! permutation matrices will be obtained using this methodology. This paper presents a technique for finding the unique permutation matrix from n! matrices. This uniquely identified permutation matrix is used to attain the reverse order Kronecker product without using the same technique, as used for obtaining the original Kronecker product.</td>
</tr>
<tr>
<td>A3010</td>
<td>Gnutella-based P2P Applications for SDN over TWDM-PON Architecture</td>
<td>Anish Sah, I-Shyan Hwang, Ardian Rianto, Andrew Fernando Pakpahan and Andrew Tanny Liem</td>
<td>Abstract---Demands for Peer-to-peer (P2P) applications are rapidly growing to become the most popular bandwidth consumers in the world. Among the various P2P applications, Gnutella is the most popular unstructured P2P networks allowing the sharing of files at a very high rate. TWDM-PON has been regarded as the promising solution to meet the higher bandwidth demands next-generation passive optical network (NG-PON2). It provides flexibility to support multiple services to multiple organization on the same fiber. SDN (software-defined networking) is the emerging technology that decouples the control and data plane and centralized the network intelligence at one place. As a result, the operators get programmability, automation and network control to manage a network that freely adapts the changes needed to the business. In this paper, a new Gnutella application for SDN over TWDM-PON architecture is proposed that the OLT and ONU are capable of handling the Gnutella traffic generated by Gnutella applications, and the Gnutella Engine Manager is controlled by SD-controller. The proposed mechanism is able to reduce the huge bandwidth waste caused by flooding controlling messages, guarantee the success of query and also localize the Gnutella inter and intra traffic between PON which improve the quality of services (QoS) in terms of the mean packet delay, jitter, system throughput and packet dropping.</td>
</tr>
<tr>
<td>A1010</td>
<td>ALT-Based Route Planning in Dynamic Time-Dependent Road Networks</td>
<td>Famei He, Yina Xu, Xuren Wang, Anran Feng</td>
<td>Abstract---In order to solve the path planning problem of time-dependent road network (TDRN), an dynamic A* landmarks triangle algorithm(ALT) is proposed based on landmark-oriented technique and short-path tree(SPT). There are three main contributions: (1) constructing the shortest path tree in the preprocessing stage and calculating the distance between the landmark</td>
</tr>
</tbody>
</table>
and other nodes; (2) using the dynamic shortest path tree to optimize the query in the point-to-point heuristic path planning process; (3) When the edge weight of the network changes, the shortest path tree is dynamically updated, and the structural characteristics of the tree are used to reduce the redundancy calculation. Experimental results indicate that the DALT algorithm not only outperforms the ALT implementation in point-to-point shortest path problem as the average query time is reduced by up to 51.71%, but also computes economically for updating shortest path tree compared with previous dynamic update algorithm as the average update times for increments are reduced by up to 9.90% with less modifications.

### A1012
**14:15-14:30**

**NMF-based DCG Optimization for Collaborative Ranking on Recommendation Systems**

*Noor Ifada, Dziyaur Rohman Miftah Alim, Mochammad Kautsar Sophan*

**University of Trunojoyo Madura, Indonesia**

**Abstract**—A recommendation system predicts a top-N list of items that a target user might like by considering the user’s previous rating history. In this paper, we solve the task of recommendation by developing a method that implements an NMF-based DCG optimization for collaborative ranking. Three main processes are applied to calculate the rating prediction for making the list of top-N item recommendations: constructing the user profile, initialising the latent-factor models using NMF (Non-Negative Matrix Factorization), and further optimising the models based on the DCG (Discounted Cumulative Gain). Extensive evaluations show that our proposed method beats all baseline methods on both the Precision and NDCG metrics. This fact confirms that NMF-based DCG optimization is an effective approach to enhance the recommendation performance and to deal with the sparsity problem.

### A1022
**14:30-14:45**

**Hydrological Time Series Prediction Model Based on Attention-LSTM Neural Network**

*Yiran Li, Juan Yang*

**Beijing University of Posts and Telecommunications, China**

**Abstract**—Constructing predictive models with neural networks has always been the focus of research in chaotic time series prediction. Since Hinton proposed the concept of deep learning in 2006, the development of neural networks is getting faster and faster, and a variety of neural networks appear. Among them, RNN neural network and LSTM neural network are applied to all fields of our daily life for the property of well-processed time series. Therefore, we use LSTM neural network to construct our model, and optimize the model by Attention mechanism to establish an Attention-LSTM hydrological time series prediction model. The experimental results show that the Attention-LSTM model has better improvement in the mean square error and absolute error of the predicted values than the common LSTM model and the traditional BP model. And due to the introduction of the Attention mechanism, it can highlight the key factors to some extent. The experimental results show that the Attention-LSTM model has the advantages of high prediction accuracy and small lag error, which is helpful for the application of deep learning algorithm in hydrological time series prediction.

### A3017
**14:45-15:00**

**Designing a Digital Payment Framework for HEI’s Using Smart ID**

*Desiree I. Cendana*

**University of Pangasinan, Philippines**

**Abstract**—The rise of digital payment has proliferated the business industry. In fact, cashless payment in developed countries have been one of the norms to improving services, making it
SESSION I

Easier for the management to ensure timely payment collection. The main objective of the study was to design a digital payment framework for Higher Educational Institutions in the Philippines to improve the services, payment transactions and solve behavioral issues of students in settling their school fees by converting student ID into Smart ID. A pre-tested questionnaire was used for data collection and 288 participants among students, parents/sponsors was drawn using snowball purposive sampling. A combination of qualitative and quantitative method was applied to present the data and validate the findings. Results revealed that 9% among 6596 total enrolled students had remaining balance at the end of the semester. Whereas 66% scholars agreed to fail in paying their fees on time due to some priorities (WM=3.24). Consequently, 63.3% (N=100) were unable to pay their tuition fee on time because they were unable to manage their money vs. personal expenses. Also, 60.9% (N=50) were unable to get their exam permit for the 3-exam period even fees were fully settled. Moreover, 75% among parents working abroad preferred the use of smart card for payment to ensure that money is consumed to tuition fee payment as to where it is intended. Whereas, the HEI’s positive feedback in considering new payment technology relies on their partnership with banks to suffice the facilities for top-up machines, card scanner/reader and the overall software and infrastructure. Study further concludes that the implementation of smart ID may possibly contribute to educational environment giving them the assurance that school fees are paid on time and the advocate to promote a sense of responsibility for students to prioritize their financial obligations.

A3025 15:00-15:15

The Tourist Attractions Recommender System in Bangkok Thailand

Pasapitch Chujai, Jatsada Singthongchai, Surakirat Yasaga, Netirak Suratthara and Khatthaliya Buranakutti
King Mongkut’s University of Technology Thonburi, Thailand

Abstract---The objective of this research is to design, develop and evaluate tourists’ satisfaction with the tourist attraction recommendation system in Bangkok, Thailand. We have four main stages for the tourist attraction recommendation system. The first stage is to fill imputed missing value with association rules and multiple imputations. The second stage is constructed the tourist attraction recommendation model by ranking the tourist attraction with a ranking method and similarity measurement's the personal recommender system with cosine algorithm. The third stage is to design and develops the personal recommender website. And the last stage, evaluate the personal recommender system with four measurements: accuracy, precision, recall, and f-measure. The experiment results from the sample of thirty peoples found that the tourist attraction recommendation system can recommend a tourist attraction that meets the needs of 340 times, recommend a tourist attraction but not meets the needs of 105 times, not recommend a tourist attraction but meets the needs of 77 times, and not recommend a tourist attraction that not meets the needs of 708 times. The results show that the tourist attraction recommendation system has satisfactory performance and reliability with high accuracy, precision, recall, and f-measure values at 85.20%, 81.53%, 76.40%, 78.89%, respectively. In addition, it was found that the satisfaction of users towards the system was at a high level which a value of 4.60. That means that the proposed tourist attraction recommendation system can be recommended personal preferences as well.

Coffee Break
<15:15-15:30>
SESSION II

September 19, 2019

Session II

[Data Analysis and Data Processing]

☞ 15:30-18:00

☞ Glory 1 (6F)

Chaired by Prof. Yoshihiro Mitani
National Institute of Technology, Ube College, Japan

10 Presentations—
A3018, A3008, A3005, A3022, A1009, A1021, A1019, A3019, A3021, A3024

*Note:

- Please arrive 30 minutes ahead of the sessions to prepare and test your PowerPoint.
- Certificate of Presentation will be awarded to each presenter by the session chair when the session is over.
- One Best Presentation will be selected from each parallel session and the author of best presentation will be announced and awarded when the session is over.
<table>
<thead>
<tr>
<th>Session</th>
<th>Title</th>
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<tr>
<td>A3018 15:30-15:45</td>
<td>Motorcycle Parts Sales Forecasting Using Auto-Regressive Integrated Moving Average Model</td>
<td>Martinus Maslim, Ernawati and Komang Arinanda</td>
<td>In the business world, the need for the availability of goods is critical, especially in motorcycle workshops. The goods availability is related to problems with customer trust, loss of capital, and storage warehouse capacity. Therefore, the ability of decision makers to predict the number of sales in the coming period is essential to be able to determine the procurement of goods more precisely. There is a method called Auto-Regressive Integrated Moving Average (ARIMA). This method is one model that can be used to forecast sales based on sales time series data in previous periods. The forecasting implementation with the ARIMA model can be done using the Pmdarima 1.1.0 library for Python. The test in this study uses sales data of 62 motorcycle parts from January 2017 to February 2019. Forecasting is done to help decision-makers in determining the amount of procurement of goods to meet the sales of the next three periods.</td>
</tr>
<tr>
<td>A3008 15:45-16:00</td>
<td>Enhancement of Old Document Image After Restoration With Morphological Approach</td>
<td>Ridha Sefina Samosir</td>
<td>An old document contains important information about culture, heritage and past story. Quality decreasing of old document images is caused by method and time storing failure, ink or paper quality, and digitizing process failure. Quality decreasing means the appearance some noise such as printed writing, widened ink, fading paper colour, some missing text and some noise caused of bad digitizing process. This study aims to do additional operation after restoration using morphological approach. Morphological approach is used to improve image quality after restoration process. Restoration use filtering algorithm. Evaluation technique for this study use statistic approach through calculation average percentage. Morphological give best result for old document images with noise such as widened ink and dirty background. But not good enough results for old document images with printed graffity from back side which appear in front side because input image contains italic character.</td>
</tr>
<tr>
<td>A3005 16:00-16:15</td>
<td>Meteorological Visibility Estimation by using Multi-Support Vector Regression Method</td>
<td>Wai Lun LO, Meimei ZHU and Hong FU</td>
<td>Meteorological visibility measures the transparency of the atmosphere or air and it provides important information for road, flight and sea transportation safety. Problem of pollution can also affect the visibility of a certain area. Measurement and estimation of visibility is a challenging and complex problem as visibility is affected by various factors such as dust, smoke, fog and haze. Traditional digital image-based approach for visibility estimation involve applications of the meteorology law and mathematical analysis. Digital image-based and machine learning approach can be one of the solutions to this complex problem. In this paper, we propose an intelligent digital method for visibility estimation. Effective regions are first extracted from the digital images and then classified into different classes by using Support Vector Machines (SVM).</td>
</tr>
</tbody>
</table>
### Multi-Supported Vector Regression (MSVR) models are used to predict the meteorological visibility by using the image features values generated by VGG Neural Network. SVR machine learning method is used for model training and the resulting system can be used for meteorological visibility estimation.

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**Application of K-Means Algorithm for Consumer Grouping**

**Joanna Ardhyanti Mita Nugraha**

Universitas Atma Jaya, Indonesia

**Abstract**—Sales fluctuations are risks that must be faced by business people, PT. Gunung Hijau Success experienced this in 2016, with GAP being quite high. By giving rewards to loyal customers, it is expected to stabilize sales in the next period. So the company needs customer grouping based on customer loyalty to reward. The application of data mining can be used as an analysis to determine the loyal customer inventory according to the total purchase. In the data mining method, the clustering algorithm is one of the most popular to use where the data belonging to the same cluster will be close to each other and will be far from the data about another cluster. The results obtained in the form of customer information with criteria not loyal, loyal, and very loyal based on sales data in 2016. Also, customer criteria information from the clustering process can be used as a reference to determine the reward for customers.

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**Cirrhosis Liver Classification on B-Mode Ultrasound Images by Convolution Neural Networks with Augmented Images**

**Yoshihiro Mitani, Robert B. Fisher, Yusuke Fujita, Yoshihiko Hamamoto, and Isao Sakaida**

National Institute of Technology, Ube College, Japan

**Abstract**—In the medical imaging field, it is desirable to develop computer-aided diagnosis (CAD) systems. They are useful as a second opinion, and to objectively and quantitatively make diagnoses. In this study, we focus on liver ultrasound images. The cirrhosis liver is expected to progress to a liver cancer in the worst case. Therefore, we are investigating a CAD system to identify the cirrhosis liver sooner. In this paper, in order to classify cirrhosis or normal liver on regions of interest (ROIs) image from B-mode ultrasound images, we have proposed to use a convolution neural network (CNN). CNNs are one of promising techniques for medical image recognition. In a previous study, we tried to classify the cirrhosis liver using a Gabor features based method, a higher order local auto-correlation (HLAC) feature based approach and an improved version. However, the classification performance of our preliminary experimental results were poor. The average error rates were still over 40%. In order to more accurately classify the cirrhosis liver, we have explored the use of the CNNs. The experimental results show the effectiveness of the CNNs. Furthermore, by a data augmentation technique, the classification performance of the CNNs is improved.

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**Content based Image Retrieval with Rocchio Algorithm for Relevance Feedback using 2D Image Feature Representation**

**Indah Agustien Siradjuddin, Aryandi Triyanto, Mochammad Kautsar S.**

University of Trunojoyo Madura, Indonesia

**Abstract**—This paper presents Content based Image Retrieval with Relevance Feedback to retrieve relevant images based on an image query. Three main steps are proposed, first, obtain
SESSION II

**2D feature representation of an image query and image database using the Integrated Color Co-Occurrence Matrix.** This feature extraction method captures two features simultaneously, they are color and texture features. Second, compute cosine similarity measurement to retrieve similar images between features of an image query and features of all images in the database. Third, update the query features using Rocchio algorithm based on the user’s relevance feedback, and recalculation of the cosine similarity between the updated feature of query and features of all images in the database. Experiments are conducted using Corel Image database that consists of 1000 images from ten classes. The proposed model for retrieving similar images achieved higher performance accuracy compare to the Content based Image Retrieval without Relevance feedback.

**Spam Detection Using Clustering-based SVM**

**Darshit Pandya**

Indus University, India

**Abstract**---Spam detection task is of much more importance than earlier due to the increase in the use of messaging and mailing services. Efficient classification in such a variety of messages is a comparatively onerous task. There are a variety of machine learning algorithms used for spam detection, one of which is Support Vector Machine, also known as SVM. SVM is widely used to classify text-based documents. Though SVM is a widely used technique in document classification, its performance in the spam classification is not the best due to the uneven density of the training data. In order to improve the efficiency of SVM, I introduce a clustering-based SVM method. The training data is pre-processed using clustering algorithms and then the SVM classifier is implemented on the processed dataset. This method would increase the performance by overcoming the problem of uneven distribution of training data. The experimental results show that the performance is improved compared to that of SVM.

**Development of Visualization Scoreboard for Four Disciplines Execution Visualization of Journal Publication on Mobile Devices**

**M. Rusli, H. Sutopo, E. Winarso and F. Huzam**

Kalbis Institute, Indonesia

**Abstract**---This study aims to develop scoreboard visualization as Four Disciplines Execution tools on mobile devices, to improve the smooth processing of the journal publication. By using a scoreboard that can be accessed on a mobile device, the journal editor team can always monitor the achievement of the process that has been obtained, and see what should do to maintain the journal to be published in the certain time. The research was conducted using Multimedia Development Life Cycle according to Luther. The results show that this mobile-based scoreboard visualization can be used properly. The results of this study can be a basic consideration for completing tools to monitor an activity in journal management to avoid the delay in publishing a journal.

**Distance and Price Validation System for Free Shipping on E-Commerce Using Batch Processing**

**Stephanie Pamela Adithama, Agitha Pramesi Sembiring and Eduard Rusdianto**

Universitas Atma Jaya Yogyakarta, Indonesia

**Abstract**---PT XYZ is an e-commerce company that applies free shipping services. Every month the
Dinner @ Restaurant  
<18:00-20:00>  
**Note:** Dinner coupon is needed for entering the restaurant.
| A1005 | Using Distillation to improve network performance after Pruning and Quantization  
Zhenshan Bao, Jiayang Liu, Wenbo Zhang  
Beijing University of Technology, China |

**Abstract**---As the complexity of processing issues increases, deep neural networks require more computing and storage resources. At the same time, the researchers found that the deep neural network contains a lot of redundancy, causing unnecessary waste, and the network model needs to be further optimized. Based on the above ideas, researchers have turned their attention to building more compact and efficient models in recent years, so that deep neural networks can be better deployed on nodes with limited resources to enhance their intelligence. At present, the deep neural network model compression method have weight pruning, weight quantization, and knowledge distillation and so on, these three methods have their own characteristics, which are independent of each other and can be self-contained, and can be further optimized by effective combination. This paper will construct a deep neural network model compression framework based on weight pruning, weight quantization and knowledge distillation. Firstly, the model will be double coarse-grained compression with pruning and quantization, then the original network will be used as the teacher network to guide the compressed student network. Training is performed to improve the accuracy of the student network, thereby further accelerating and compressing the model to make the loss of accuracy smaller. The experimental results show that the combination of three algorithms can compress 80% FLOPs and reduce the accuracy by only 1%. 

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