

# PROCEEDINGS

# BSASA-2018

**International Conference on Recent  
Innovations in Biotechnology, System  
Engineering, Applied Sciences, Space  
Environment & Aviation Technology**

**Venue: Hotel Mystays Ochanomizu Conference Center**

**Tokyo, Japan**

**Date: September 22-23, 2018**



# ***CONFERENCE BOOK OF ABSTRACT PROCEEDINGS***

*Consortium-ET*

Consortium of Engineering & Technology



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# **Book of Abstracts Proceedings**

**International Conference on Recent Innovations in Biotechnology, System Engineering, Applied Sciences, Space Environment & Aviation Technology (BSASA-2018)**

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Proceedings of the International Conference on Recent Innovations in Biotechnology, System Engineering, Applied Sciences, Space Environment & Aviation Technology (BSASA)

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***International Conference on Recent Innovations in  
Biotechnology, System Engineering, Applied Sciences,  
Space Environment & Aviation Technology (BSASA)***

**Venue: Hotel Mystays Ochanomizu Conference Center Tokyo, Japan**

**Conference Theme:** An effective platform to meet other renowned experts in the field of engineering and technology.



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Conference Coordinator

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## CONFERENCE TRACKS

- Computer and Software Engineering
- Mechanical & Metallurgical Engineering
- Electrical & Electronics Engineering
- Civil Engineering
- Bio-Technology & Food Technology
- Chemistry & Chemical Engineering
- Physical, Applied and Life Sciences
- Interdisciplinary

## CONFERENCE CHAIR MESSAGE

### **Michael Sasaoka**

“International Conference of Consortium of Engineering & Technology” is a platform that thrives to support the worldwide scholarly community to analyze the role played by the multidisciplinary innovations for the betterment of human societies. It also encourages academicians, practitioners, scientists, and scholars from various disciplines to come together and share their ideas about how they can make all the disciplines interact in an innovative way and to sort out the way to minimize the effect of challenges faced by the society. All the research work presented in this conference is truly exceptional, promising, and effective. These researches are designed to target the challenges that are faced by various sub-domains of the social sciences and applied sciences.

I would like to thank our honorable scientific and review committee for giving their precious time to the review process covering the papers presented in this conference. I am also highly obliged to the participants for being a part of our efforts to promote knowledge sharing and learning. We as scholars make an integral part of the leading educated class of the society that is responsible for benefitting the society with their knowledge. Let’s get over all sorts of discrimination and take a look at the wider picture. Let’s work together for the welfare of humanity for making the world a harmonious place to live and making it flourish in every aspect. Stay blessed.

Thank you.

Michael Sasaoka

Conference Chair

Email: [contact@consortium-et.com](mailto:contact@consortium-et.com)



# CONFERENCE AGENDA

DATE: September 22-23, 2018

LOCATION: Hotel Mystays Ochanomizu Conference Center

DAY: Saturday-Sunday

Event Title: International Conference on Recent Innovations in Biotechnology, System Engineering,  
Applied Sciences, Space Environment & Aviation Technology BSASA-2018

## Start Time

09:00 am - 09:10 am: Registration & Kit Distribution  
09:10 am - 09:20 am: Introduction of Participants  
09:20 am - 09:30 am: Inauguration and Opening address  
09:30 am - 09:40 am: Grand Networking Session

**Tea/Coffee Break (09:40 am -10:00 am)**



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Session: 01  
10:00 am - 12:30 pm: Presentation Session  
Track A: Engineering, Technology & Applied Sciences

Presenter Name	Manuscript Title	Paper ID
Mr. I-Hsi Kao	Design of Outdoor Autonomous Mobile Robot	BSASA-SEP18-101
Ying Lung Lin	Lexicon-Based Sentiment Analysis System on the Policies of Taiwan National Health Insurance	BSASA-SEP18-102

## Track B: Business, Economics, Social Sciences and Humanities

Chollada Luang-pituksa, Ph.D	Financial Efficiency and Economic Growth in Thailand	SMBIA-SEP2018-102
Yibing Zhang	Mobile Learning in a Chinese Business Context	SMBIA-SEP2018-104
Yaguba JALLOH	Resistivity Survey and Groundwater Quality Analyses in Pepel, Sierra Leone	SMBIA-SEP2018-107
Hung-Yi Lin	Novel Feature Selection Index for Molecular Classification	SMBIA-SEP2018-112
Nakhun Thoraneenitayan	Measuring Performance of Thai Saving and Credits Cooperatives using Data Envelopment Analysis	SMBIA-SEP2018-114
Nuntasaree Sukato	An Innovative Tool for SME Hotels	SMBIA-SEP2018-119
Teerawate Lim-gomonvilas	Multi-Criteria Analysis and network analysis for walkability score in Amphoe Muang, Nonthaburi, Thailand	TKS-498-101

**Lunch Time & Closing Ceremony (12:30 pm - 01:30 pm)**

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### Participants Registered As Listener/ Observer

The following Scholars/ practitioners who don't have any paper presentation, however they will attending the conference as delegates & observers.

**Official ID:** SMBIA-SEP2018-115A

Dr. Rer. Pol. Habil. Martin Kloyer

Chair for Business Administration, especially for Organization,  
HR, and Innovation University of Greifswald

## CONFERENCE AGENDA

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### Conference Day 02 (September 23, 2018)

Second day of conference will be specified for touristy. Relevant expenses are borne by Individual him/herself.



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***TRACK A***

***ENGINEERING, TECHNOLOGY & APPLIED SCIENCES***



## **Design of Outdoor Autonomous Mobile Robot**

<sup>1\*</sup>I-Hsi Kao, <sup>2</sup>Jian-An Su, <sup>3</sup>Jau-Woei Perng

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**Keywords:** Lane keeping, Q-Learning, Robotic.

This study presents the design of a six-wheeled outdoor autonomous mobile robot. The main design goal of our robot is to increase its adaptability and flexibility when moving outdoors. This six-wheeled robot platform was equipped with some sensors, such as a global positioning system (GPS), high definition (HD) webcam, light detection and ranging (LiDAR), and rotary encoders. A personal mobile computer and 86Duino ONE microcontroller were used as the algorithm computing platform. In terms of control, the lateral offset and head angle offset of the robot were calculated using a differential GPS or a camera to detect structured and unstructured road boundaries. The lateral offset and head angle offset were fed to a fuzzy controller. The control input was designed by -learning of the differential speed between the left and right wheels. This made the robot track a reference route so that it could stay in its own lane. 2D LiDAR was also used to measure the relative distance from the front obstacle. The robot would immediately stop to avoid a collision when the distance between the robot and obstacle was less than a specific safety distance. A custom-designed rocker arm gave the robot the ability to climb a low step. Body balance could be maintained by controlling the angle of the rocker arm when the robot changed its pose. The autonomous mobile robot has been used for delivery service on our campus road by integrating the above system functionality.



## **Lexicon-based Sentiment Analysis system on the Policies of Taiwan National Health Insurance**

\*Ying Lung Lin

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**Keywords:** Sentiment analysis, Opinion mining, Lexicon-based.

National Health Insurance (NHI) is an important health policy that deeply affects Taiwanese. To achieve the higher quality policies, the officials need some powerful tools to perceive the feedbacks. Then refer the feedbacks to revise the policies with time. Therefore, we introduce the lexicon-based sentiment analysis system in the health domain. To confirm our system is feasible, we validate it with the 2017 annual questionnaire. The result shows the system can reflect the facts on three NHI related policies (1) Family physician (2) Hierarchical medical system (3) Blue button system. Thus we sure the system is reasonable. Through the functions we deploy, we can use visualization tools to find the key points and filter out the unrelated comments. These help officials to analyze the sentiment in real-time. Overall, the lexicon-based method is both useful and lower cost. Moreover, get the benefit from the simple structure; our system can quickly reproduce to other domains. This study also discusses the disadvantages of the lexicon-based method. Fortunately, this can be improved by the learning-based method in the future. We hope this system can facilitate officials capture what people talk. Let the NHI related policies be better.



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***TRACK B***

***BUSINESS, ECONOMICS, SOCIAL SCIENCES AND  
HUMANITIES***



## **Financial Efficiency and Economic Growth in Thailand**

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**Keywords:** Financial Efficiency, Economic Growth, Granger Causality, Lending-Deposits Spread, Net Interest Margin, Overhead Cost

This paper investigates the relationship between financial efficiency and economic growth in Thailand with annual time series during 1991 - 2015. Financial efficiency measures (i) bank efficiency in intermediating savings to investment, as measured by the net interest margin (the accounting value of bank's net interest revenue as a share of its average interest-bearing assets); IMARGIN and lending-deposit spread; ISPREAD and (ii) operational efficiency measures, such as overhead costs to total assets; NONILIA while the percentage change of real GDP per capita (RGDP) represents economic growth. The Augmented Dickey Fuller Test (ADF) of the stationary test shows that all data are stationary at the first difference except ISPREAD is stationary at the second difference. Since all variables are not integrated at the same order, hence there are no short run and long run relationship between financial efficiency variables and economic growth. The pairwise Granger causality result; with 1 lagged length selected by Akaike Information criterion (AIC), shows that no causality between financial efficiency variables and economic growth and vice versa; supports the neutral hypothesis. However, there is a one way causality linkage between two financial efficiency indicators, lending and deposit interest rate spread and the ratio of overhead costs to total assets. In other words, the banks profit from interest spread is used to improve bank efficiency such as hiring more staff, increase number of branches and ATM machines to improve bank services. Therefore, financial institutions should provide financial services to response customers needs as the commercialization and modernization of the economy.



## **Mobile Learning in a Chinese Business Context**

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**Keywords:** Mobile Devices, Mobile Technologies, Business Environment

The increasing use of mobile devices and mobile technologies in everyday living has brought many opportunities for corporate business via mobile learning. Mobile devices with Internet capabilities and applications have dramatically increased the convenience and effectiveness of accessing information for employees learning and development, which establishes a need for better understanding how people learn through mobile devices in the increasing complex and dynamic business environment. As a highly popular possession among the employees in the Chinese organisations, as well as among general population, learning through mobile devices in the context of Chinese business setting warrants attention from both the HRD (Human Resource Development) practitioners and researchers. This study aims at identifying mobile learning characteristics in a Chinese business setting. A mixed research approach of quantitative and qualitative methods was employed, which involved a survey with 665 responses and interviews with 40 employees from four business organisations in China in 2017. Based on the outcome of this study, the key characteristics of mobile learning in a Chinese business setting have been presented and discussed. This study provides useful information in understanding the drivers, perceived benefits, concerns and trends for mobile learning in China in order to take proactive interventions for successfully implementing mobile learning in Chinese organisations. Theoretical and practical implications, limitations, and opportunities for future research were discussed.



## **Resistivity Survey and Groundwater Quality Analyses in Pepel, Sierra Leone**

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**Keywords:** Vertical Electric Sounding, Groundwater, Portable water and Water Quality

Water is an important natural resource that requires proper management to ensure its quality, quantity and sustainability. In Pepel, northern region of Sierra Leone, majority of the population depend on groundwater for domestic and other purposes. For this reason, resistivity survey and water quality analyses were conducted in 5 boreholes in Pepel. Four geoelectric layers were identified viz a top sandy soil, a wet clay layer, and a fine-medium-coarse sand layer identified as the aquifer layer and the fourth sandy gravel layer as the confine aquifer, which is the source of portable water in the study area. Depth to the aquifer ranges from 4.18 m in the vicinity of BH4, 8.37 in the vicinity of BH2, 9.35 m in the vicinity of BH5. Both BH1 and BH3 have depth of 16.20 m each. The absence of legitimate surface water sources clearly indicates that most of the rainfall goes into storage in the subsurface, which indicate that the groundwater potential in the area could be good. The results showed that there is a linear relationship between resistivity, transmissivity and depth through sandy soil formations (porous aquifer). Analyses of water quality showed that, the presence of NO<sub>3</sub><sup>-</sup> and SO<sub>4</sub><sup>-</sup>, lowered the pH and the water becomes acidic which dissolves the Fe<sup>2+</sup> and Mn<sup>2+</sup>. This may leach through the ground slowly to contaminate the underground water resources.



## **Novel Feature Selection Index for Molecular Classification**

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Technology Taichung, R.O.C.

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**Keywords:** Cluster Analyses, Discrimination Power, Feature Selection, Molecular Classification, Information Gain

Traditional feature selection methods have two major inappropriate designs in their criterion. Firstly, they trade the profit of relevant information off against the risk of redundant information. Secondly, they cannot get rid of the well-known trap of the  $m$  best features are not the best  $m$  features. There is no necessary inheritance between two consecutive selection rounds. As a remedy for the first problem, we propose a new selection criterion, which concentrates on verifying discrimination boosting effect derived from the additional feature. A novel feature selection scheme is also proposed in this paper as a mend on the second problem. Our experimental results show that dissimilar subsets composed of totally different selected features can have so quite similar discrimination power that they might achieve resembled classification quality. They also reveal that our proposed method can successfully explore simple reduced subsets of features for three datasets with both efficacy and efficiency.



## **Measuring Performance of Thai Saving and Credits Cooperatives using Data Envelopment Analysis**

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**Keywords:** Savings and Credit Cooperative, Performance Measurement, Data Envelopment Analysis

The first cooperative of Thailand was established in 1916 under the main objective to be the source of funds for the cooperative members. Until present, the cooperative businesses have been highly developed and grown. In 2017, there have been 8,194 cooperatives throughout the country. Among various types of Thai cooperatives, savings and credit cooperatives (SCCOs) play an important role for Thai cooperative society. The SCCOs are also known as one of the microfinance institutions format in the category of retail microfinance institutions. In recent years, it was found that the savings and credit cooperatives generated maximum business volumes about 79% of total cooperative business transactions. The aim of this research is to find an appropriate benchmark model by proposing non-parametric efficient frontier approach called Data Envelopment Analysis (DEA) as an alternative method to evaluate the performance of savings and credit cooperatives in Thailand. Additionally, the sources of inefficiency in the SCCOs and potential improvements will be investigated. The financial data of 134 large SCCOs during January-December 2017 were collected from the databases of Cooperative Auditing Department, Ministry of Agriculture and Cooperatives of Thailand. The CCR and BCC output maximisation models comprise of 2 inputs and 3 outputs, according to production approach, were used to estimate technical efficiency. The primary results show that performance of the SCCOs lies between 73.58 to 77.63 percent, on average. The efficiency evaluation results classified according to the types of cooperatives indicated that the educational institution cooperative had maximum quantity of efficient cooperatives and average efficiency score.





## **An Innovative Tool for SME Hotels**

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**Keywords:** Hotel, Innovative tool, SMEs, Tourism.

In global business, tourism industry is a fast-growing sector and faces with the pressures of a highly competitive environment. Likewise, the tourism industry plays a significant role to drive national economic growth in Thailand. The hotel segment is chosen for this study because hotel industry has continued to grow and the weight of tourism in Thailand further highlights the importance of maintaining competitiveness in the hotel industry. In addition, The Thai government has the strategic policy of preparation for small and medium enterprises (SMEs) entering the ASEAN Economic Community (AEC) since 2015. In recent years many countries have implemented strategies for the establishment and expansion of SMEs to promote economic growth, employment and income generation. For this reason, SME hotels in Thailand are worth to investigate because they need to gain a distinctive advantage in order to sustain their businesses and, finally generate income to the country. SME hotels are encouraged to adopt innovative practices to better maintain relationship with their targeted customers. The use of databases has been increasing in the industry and importantly, data mining offers considerable potential as parts of customer relationship in the hotel industry due to its benefit for managing large and complex buyer behavior. However, it has been used rarely in SME hotels. This study aims to introduce the application of data mining in SME hotels in Thailand. A qualitative approach was chosen because the study aimed to conduct a preliminary exploration of innovative application in SME hotels in Thailand. The purposive sampling with a snowball technique was employed to organize personal in-depth interviews with hotel managers. The findings showed that an innovative practice, i.e. data mining, essential for the development of long-term relationships with customers in the industry. In order to help SME hotels enhancing their performance, this study suggested a four-stage process of data mining.



## **Multi-Criteria Analysis and network analysis for walkability score in Amphoe Muang, Nonthaburi, Thailand**

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**Keywords:** Information Transmission, Institutional Investors, Individual Investors

This research aims to analyze geographic factors and walkability score in Amphoe Muang, Nonthaburi, Thailand. The score calculated from two mains of factors. First, physical of road network are 1) centrality and 2) betweenness. Second, accessibility from facility are 1) commercial 2) public transportation 3) landmarks 4) recreation area 5) workplace 6) residential 7) scenery and 8) safety. Fuzzy membership method is used to set score factor (0-1). Rank Sum weight (RS) method are used for compared all factors and used Network analysis to combine walk scores and determine total scores for compare alternative route. The result shown that public transportation (0.182) is highest weighting commercial (0.164) safety (0.145) scenery (0.127) betweenness (0.109) centrality (0.091) landmarks (0.073) residential (0.055) workplace (0.036) and recreation area (0.018) respectively. Analysis walkability by network analysis found that highest-walkability is 15.10% high-walkability is 20.75% moderate-walkability is 26.47% low-walkability is 27.07% and very low-walkability is 10.60%. The conclusion is best walkability route located on Rattanathibeth Road because of it have high accessibility factor along the route such as MRT (public transportation) department store (commercial) and police station (safety).

## ***UP COMING EVENTS***

You can find the details regarding our upcoming events by following below:

<http://consortium-et.com/upcoming-events/>

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# MISSION

*To disseminate knowledge and help scholars, practitioners and administrators to promote the high quality research.*

