

PROCEEDINGS

TPIEA-2019

**2nd International Symposium
on Theory and Practice in IT, Engineering
& Applied Sciences**

Venue: Hotel Mystays Ochanomizu Conference Center

Tokyo, Japan

Date: February 23-24, 2019



CONFERENCE BOOK OF ABSTRACT PROCEEDINGS

Consortium-ET

Consortium of Engineering & Technology



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Book of Abstracts Proceedings

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*2nd International Symposium on Theory and Practice in
IT, Engineering & Applied Sciences (TPIEA)*

Venue: Hotel Mystays Ochanomizu Conference Center, Japan

Conference Theme: Provides a premier interdisciplinary platform for researchers, practitioners and educators to present and discuss the most recent innovations, trends, and concerns as well as practical challenges encountered and solutions adopted in the fields of Engineering and Technology.



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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



CONFERENCE AGENDA

DATE: February 23-24, 2019

LOCATION: Hotel Mystays Ochanomizu Conference Center

DAY: Saturday-Sunday

EVENT TITLE: 2nd International Symposium on Theory and Practice in IT,
Engineering & Applied Sciences TPIEA-2019

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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EVENT TITLE: 2nd International Symposium on Theory and Practice in IT,
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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
TPIEA-FEB19-101	The Sensitivity of Groundwater Level on Soil Liquefaction Potential in Ilan Area	Tsung-I Hsiao
TPIEA-FEB19-102	Application of Romberg Tree Integration Method in Numerical Calculation of Strong Oscillation Fourier Integral	Chao-Jung,Chiu
TPIEA-FEB19-103	Application of BIM to bridge engineering information delivery	Yihan Liao
TPIEA-FEB19-104	The Effect of Building Scale to Natural Ventilation of Shelter in Taiwan	Chen, Yi-Han
TPIEA-FEB19-105	Establishment of the Safety Potential Analysis Model for Anchored Slope	Huang, Cheng-Yu
TPIEA-FEB19-106	Hydration Temperature and Shrinkage of High-volume Fly Ash Concrete using Ring Shrinkage Test	Yu-Chen Hsu
TPIEA-FEB19-107	Secret QR Code Sharing Scheme	Pei-Yu Lin

Track B: Business, Economics, Social Sciences & Humanities

MRSSM-029-ANI105	A Study on Consumers Purchasing Behavior, Brand Image, and Product Attributes: The Case of Huge Heavy Motorbikes	Chien-Chi Lin
EGER-FEB2019-103	Image Stitching and Fusion over a Whole Spherical Surface Using Geometric Parameters Calibration	Ku Chin Lin
EGER-FEB2019-106	Farmers Knowledge, Attitude and Practices of Smart Agriculture in Taiwan	Jui-Hsiung Chuang
EGER-FEB2019-108	Clarifying barriers to sustainable development: the context of unsustainable behavior	Chong-Wen Chen

Lunch Time & Ending Note: (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: TKM-428-101A

Emad D. J. D. Alawadh
Medical Group, Ahmadi Hospital

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Conference Day 02 (February 24, 2019)

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

The Sensitivity of Groundwater Level on Soil Liquefaction Potential in Ilan Area

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Keywords: Soil Liquefaction Potential, Earthquake, Groundwater, Boring Sample, Ilan

Ilan area is located between the eastern and the northeast seismic belt of Taiwan, which the earthquake occurs quite a lot. The central part of Ilan area, Langyang Plain, is alluvial plain coupling with fine particles of loose granular soil and high groundwater level. Therefore, the possibility of soil liquefaction in Ilan area is very high once the earthquake occurs. In order to prevent the liquefaction damage caused by strong earthquakes, we conducted comprehensive geotechnical investigation project with a density of 4 holes per square kilometer in the middle and lower ranges of the Lanyang River, which flows through the Lanyang Plain. After completing the liquefaction analysis of about 200 soil boring samples, it is estimated that the Langyang Plain with an area of about 70% or more in the Ilan area is in a high potential for soil liquefaction. Considering the effect of groundwater level in the soil deposits has always been a matter of concern to geotechnical engineers, this study uses the valuable results of the soil boring samples to study the sensitivity of the groundwater level on soil liquefaction potential and explore the feasibility of controlling groundwater level for disaster reduction.



Application of Romberg Tree Integration Method in Numerical Calculation of Strong Oscillation Fourier Integral

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Keywords: Fourier Integral, Numerical Quadrature

It is well known that the dynamic responses of viscoelastic medium induced by moving loads can be expressed as linear combinations of some Fourier integrals which contain some intervals involved with violently oscillatory integrands. The purpose of this article is aiming at the numerical quadrature scheme for this kind of violently oscillatory Fourier integrals. In this scheme, the whole semi-infinite integration range are partitioned into a sequence of intervals according to section points posited at all roots of cosine and/or sine functions involved in these Fourier integrals. Next, numerical quadrature of each of these intervals are analyzed by using Romberg-Tree integration method which can adjust the distribution of integration points adaptive to the characteristics of the oscillatory integrands. Theoretically, all numerical quadrature values corresponding this sequence of intervals constitute an infinite series. By using epsilon-algorithm, we can estimate the limit of this infinite series while only finitely truncated series of numerical quadrature values are calculated. The efficacy of this numerical scheme is validated by numerical experiment on some typical cases of this kind of Fourier integral.



Application of BIM to Bridge Engineering Information Delivery

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Keywords: BIM , COBie , Maintenance Management , Bridge

In recent years, application of BIM (Building Information Modeling) in Taiwan has become more and more mature in building projects, but it is relatively rare in infrastructure projects such as bridges and roads. The bridge project covers a wide area and a large scale, and it takes a lot of manpower in the construction, maintenance management ect. Therefore, the concept of BIM is used to assist the bridge engineers to reduce the manpower required. In the maintenance management phase, 2D drawings and paper forms are mostly used in the past, and many defects of maintenance management often occur in this mode. In order to improve this problem, the COBie (Construction Operations Building Information Exchange) data form can not only display the model equipment information, but also transmit the information to the maintenance unit or related personnel as the management basis. With the help of COBie, maintenance personnel without operating BIM models can also understand the information of their equipment status. In this regard, this study will use the existing bridge case in Taiwan to explore the application of COBie to bridge engineering. In this way, the purpose of quickly recording or extracting information of various elements in the model is achieved, so as to assist the engineers to reduce manpower in the maintenance management phase of bridge engineering.



The Effect of Building Scale to Natural Ventilation of Shelter in Taiwan

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Keywords: Natural Ventilation, Computational Fluid Dynamics, Building Scale

The annual average temperature is increasing because of the increasing greenhouse effects of the earth. Taking a sheep house in Taiwan as an example, the temperature and humidity index (THI) in the summer of 2017 is only 2.11% in normal condition, 49.67% in warning condition, 39.13% in dangerous situation and 9.09% in emergency situation, thus the heat stress situation of the sheep house is very serious. There are many shelter-type buildings of factories, animal barns and other buildings in Taiwan. In order to prevent the heat stress problems in animals and people, natural ventilation must be induced in the design of the building to improve the thermal environment. The variance of different aspect ratios in shelter design generates different velocity fields and temperature fields which result in the different efficiency of natural ventilation. The object of this study is to find the optimal building scale of the shelter-type building in Taiwan which will induce natural ventilation efficiently and improve the discharge rate and thermal environment. The software of computational fluid dynamics is used to simulate the velocity fields and temperature fields based on the existing shelter-type buildings in Taiwan. The effects of different scales on the wind field and thermal environment are analyzed to explore the efficiency of natural ventilation. The research results can simulate the wind and temperature fields to obtain the optimal configuration of the sheltered-type building design and provide best ventilation rate and thermal environment.



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Establishment of the Safety Potential Analysis Model for Anchored Slope

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Keywords: Anchor, Slope, Safety Potential, Geographic Information System

Topography of Taiwan are dominated by mountains and hills. In order to stabilize the safety of the slope, the ground anchor method is used to improve the stability of the slope. With service life of ground anchor increasing, the function of ground anchors is highly valued. Particularly, there have been many slope disasters of ground anchor in recent years, so ground anchor inspection has also received attention. The article introduce the concept of safety potential analysis, and use the concept for the anchored slope. Then collect basic map, historical slope inspections, monitoring data, ground anchor inspections and maintenance practices and further use the geographic information system to establish the slope model. Finally, provide the result of safety potential analysis and offer the dangerous area of the slope to government entities for immediately handle .

Hydration Temperature and Shrinkage of High-volume Fly Ash Concrete using Ring Shrinkage Test

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Keywords: Ring Test, Drying Shrinkage, Cracking, Hydration Temperature, Strain.

During the hardening period of conventional concrete, the consumption of water and temperature variation in the hydration reaction of the Portland cement led to drying shrinkage and deformation of concrete volume, which can cause cracking and even failure over the long term. Traditionally, the inclusion of fly ash as cement replacement substance in concrete was used to reduce the hydration temperature in produced concrete. This study is aimed to evaluate the effect of high-volume fly ash on the hydration temperature and shrinkage of concrete, which was dosed with 20 %, 40 %, 60 % and 80 % replacement of cement by weight as well as the water-cementitious ratio of 0.42 was mixed. The volume stability was conducted by ring shrinkage test in accordance with ASTM C1581. The results indicated that the specimen containing 80 % fly ash had lower hydration temperature, lower strain, lower average stress rate and lower compressive strength for early age. In conclusion, the inclusion of high-volume fly ash in concrete can reduce the strain generated during the hardening period and delay cracking, whereas the addition of fiber was shown to increase the resistance of the specimens to cracking strain.



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Secret QR Code Sharing Scheme

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Keywords: Secret sharing, QR code

QR (Quick Response) code is widely-used with the advantages of small tag, large data capacity, reliability and high-speed scanning. Many protection and security issues have been raised for QR code recently. A secret QR data sharing system is proposed in this article. The new system divides the secret into n individual shares and then generate the corresponding n secret QR tags. The normal user still can scan and thereby read the original QR content from the secret QR tags. In the (n, n) -threshold sharing system, the authored users with the n secret QR tags can furthermore cooperate to reveal the secret. The new approach can satisfy the essentials of the readability of secret QR tags and the lossless content of secret in the (n, n) -threshold sharing system.



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TRACK B

BUSINESS, ECONOMICS, SOCIAL SCIENCES & HUMANITIES

A Study on Consumers Purchasing Behavior, Brand Image, and Product Attributes: The Case of Huge Heavy Motorbikes

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Keywords: Huge Heavy Motorbikes, Brand Image, Product Attributes, Lifestyle, Consumers' Purchasing Behavior

With the opening of huge heavy motorbikes, consumers to buy huge heavy motorbikes as a tool for leisure activities are gradually increased. Making based on huge heavy motorbikes related activities rise, motorcycle sports and motorcycle leisure as a new leisure trend and issues. Through the questionnaire survey, while 300 questionnaires were given, 280 valid sample were returned, the questionnaires content including brand image, product attributes, consumers' purchasing behavior and personal information. The data were analyzed by reliability analysis, validity analysis, descriptive statistics analysis and variance analysis. The research conclusions are as follows: The main consumers of huge heavy motorbikes gender for male, age for 30-39, education level for university, monthly income for 3-5 million, occupation for industry and commerce service industry and residential areas for northern region based. The main consumers' purchasing behavior of huge heavy motorbikes motivation for leisure amusements, information sources for internet information, brand for Japanese brand, price for below 300,000 and function for street vehicle based. Different consumers' purchasing behavior regarding brand image, product attributes and lifestyle had significant differences.

Image Stitching and Fusion over a Whole Spherical Surface Using Geometric Parameters Calibration

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Keywords: Image Stitching and Fusion, Geometric Parameters Calibration, Geodesic Distance, Ball Quality Control

The purpose of this study is to construct a whole spherical surface image of a golf ball by using multiple local images of the ball, through image stitching and fusion. The main application is to carry out automatic optical inspection (AOI) of the golf ball. AOI plays a well-known and important role in quality control systems in the manufacturing processes. However, a ball is a non-traditional surface and defects of many types require precise zoom-in view to be identified. Traditional fusion techniques are only available for planar images. Due to a golf balls non-planar geometry, new fusion algorithms are developed by implementing geodesic geometry. A non-planar positioning mechanism is essential and therefore is designed in this study to precisely control the balls orientation and capture the images for stitching and fusion. Geometric parameter transformation between image and physical coordinate systems and image fusion are formulated in an expanded image coordinate system in this study. Contrary to previous approaches, the weighted sum approach is introduced for fusion of overlapping images. The final fusion results of the images can be severely affected by installation errors of the cameras views. For this, calibrating geometric parameters such as viewing angles and compensating errors through mathematical derivations, are of utter importance to this study. This can be done by computer simulations and in addition, complementary lines are drawn on the real ball surface for alignment between neighboring images. With a commercial package with built-in functions such as LabVIEW, the ball surface image can be constructed to examine and visualize the outcome. Experimental work has been performed with a case study included in this paper to support the principle of this study. .



Farmers Knowledge, Attitude and Practices of Smart Agriculture in Taiwan

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Keywords: Smart Agriculture, Farming 4.0, Innovation Adoption, Digital Technology, Taiwan

Due to integration of precision farming system and digital technology, the smart agriculture (SA) has been recognized as the most influential trends in agricultural development which may contribute to higher yields, less damage and fewer inputs of agricultural production. Given that human resource development is a key factor to developing smart agriculture, how to encourage farmers and agri-businesses adopting innovative digital technologies and intelligent mobile devices into farming practices is becoming a policy priority in Taiwan. The Council of Agriculture has launched the Smart Agriculture Project since 2017 which aims at incorporating farming robots, drones, image detection, wireless monitoring and control, farm management apps, IoT and big data analysis to increase agricultural productivity and efficiency. However, there is limited literature available on farm and individual characteristics and psychologic factors that drive farmers intentions to adopt SA technologies. The purpose of this study is to investigate how farmers knowledge and attitude of smart agriculture affects their adoption of SA technologies in Taiwan. A survey instrument was designed to measure farmers SA adoption behavior as dependent variable as well as SA knowledge level and importance assessment as explanatory variables. A face-to-face interview was conducted and targeted the trainees of a series of SA training programs hosted by the National Taiwan University and Council of Agriculture in 2017 and 2018. A total of 321 farmers participated in the projects survey, from which the data was used to analyze the SA Knowledge & Importance Matrix and to perform an OLS regression model of SA adoption. The K/I Martix results show that farm management apps and automatic environmental control system are categorized into quadrant of more knowledge/high importance. By contrary, IoT and big data analysis is assigned to less knowledge/high importance quadrant. Moreover, the regression estimation of SA adoption revealed that higher perception of smart agriculture (knowledge and importance level) significantly increases



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the adoption behavior of digitalized and intelligent farming practices. As expected, age, education, farm revenue, and agri-business (compared with self-employed farmer) were significantly related to SA adoption level. This study contributes to a preliminary understanding of relationship between innovation and adoption of SA technologies in a small-scale farming economic context. The main policy implication of this study can be inferred. The findings of this study suggest that the policy makers and R&D institutes need to concentrate on improving market access for well-known and high important SA technologies. In addition, providing systematic training courses related to applications of IoT and big data in agriculture may serve farmers better to engage in smart agricultural practices.



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Clarifying Barriers to Sustainable Development: The Context of Unsustainable Behavior

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Keywords: Sustainability, Conflicts; Ethics, Behavior change, Competition, Collaboration

The idea goal of sustainable development is to balance the economic, environmental, and social systems. Many approaches and tools have been developed to promote sustainability. However, behavioral conflicts and contradictions that break balance between these systems are barely discussed and the whole context of unsustainable behavior still remains unclear. By discussing plenty of practical cases, this paper presents a short communication that summarizes fundamental barriers to sustainable development. A three-level hierarchical framework is then proposed to help recognize unsustainable behavior. Potential pathways towards sustainable development are also indicated based on the proposed framework. The proposed issues in this paper are aimed to provide a better understanding of sustainability and spark researchers and practitioners thinking and communication for collaborative problem solving.

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

