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MRRDS

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January 29-30, 2018

Osaka International Convention Center

Book of abstracts

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Office Address:
M2-17-01 Tower 2, Level 17 8trium
Bandar Sri Damansara,
52200 Kuala Lumpur, Malaysia
CONTACT: (+6) 03 6735 6566
EMAIL: contact@mrrds.education

Organizing Committee

1. **Mr. Leon Yap**

Conference Coordinator

2. **Mr. Metin**

Conference Coordinator

3. **Ms. Petrel Qiu**

Conference Coordinator

Contents

Conference Chair Message

Dr. Hungxiz Li

International Conference on "Entrepreneurship, Management, E Commerce and Global Economy (EMCG)" serves as platform that aims to help the scholarly community across nations to explore the critical role of multidisciplinary innovations for sustainability and growth of human societies. This conference provides opportunity to the academicians, practitioners, scientists, and scholars from across various disciplines to discuss avenues for interdisciplinary innovations and identify effective ways to address the challenges faced by our societies globally. The research ideas and studies that we received for this conference are very promising, unique, and impactful. I believe these studies have the potential to address key challenges in various sub-domains of social sciences and applied sciences.

I am really thankful to our honorable scientific and review committee for spending much of their time in reviewing the papers for this event. I am also thankful to all the participants for being here with us to create an environment of knowledge sharing and learning. We the scholars of this world belong to the elite educated class of this society and we owe a lot to return back to this society. Let's break all the discriminating barriers and get free from all minor affiliations. Let's contribute even a little or single step for betterment of society and welfare of humanity to bring prosperity, peace and harmony in this world. Stay blessed.

Thank you.

Dr. Hungxiz Li
Conference Chair
MRRDS– 2018

Conference Schedule

DAY 01 Monday (January 29, 2018)

Venue: Osaka International Convention Center

09:00 am – 09:30 am	Welcome Reception & Registration
09:30 am – 09:40 am	Opening Ceremony
09:40 am – 09:50 am	Welcome Remarks –Conference Coordinator MRRDS
09:50 am – 09:55 am	Introduction of Participants
09:55 am – 10:00 am	Group Photo Session
10:00 am – 10.30 am	Grand Networking Session and Tea Break

DAY 01 Monday (January 29, 2018)

Session I (10:30 am – 12:30 pm)

Session Chair: Leon Yap

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Lunch Break (12:30pm – 1:30 pm)

DAY 01 Monday (January 29, 2018)

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Session Chair: Leon Yap

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OKE-518-103	First Principles Calculations of Thermoelectric Properties of Bi2Te3 And Pbte	Hyo Seok Kim, Jung Gun Bae
OKE-518-104	Theoretical Prediction of the Electronic Transport Properties of the Al-Cu Alloys Based on the First-Principle Calculation and Boltzmann Transport Equation	Garam Choi , Ji Woong Yu , Jiyeong Cho
OKE-518-105	Interfacial Structure Analysis for the Morphology Prediction of Adipic Acid Crystals from Aqueous Solution	Minhwan Lee ,Seulwoo Kim
ECEEE-JAN18-102	A Study on Personal Information Infringement Measures of Mobile Augmented Reality System	Mr Dong-Seung Geum
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Track C: Medical, Medicine and Health Sciences

OKM-518-101	Persistence of Varicella Zoster Virus in Saliva and Postherpetic Neuralgia in Patients with Herpes Zoster	Seong Yeon Park

Closing Ceremony (3-30 pm to 4:45pm)

List of Conference Attendees

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

Sr. No	Official ID	Name	Affiliation Details
1.	**EMCG-JAN-105A**	Hyeonju Seol	Chungnam National University, Korea
2.	**OKE-518-106A**	Soon-Sun Kwon	College of Natural Sciences,Ajou University, Korea

DAY 02 Tuesday (January 30, 2018)

City Tour and Shopping Day

All respective guests are free to conduct their own sightseeing and tour. The second day of the event is reserved for this memorable purpose.

Track A: Business, Economics, Social Sciences and Humanities

Design of Virtual Reality Materials for E-Learning

Yu-Tung Wu[1], Sheng-Han Yen[2], Yu-Ren Gong[3], Yuan-Hsun Liao*[4], Hsiao-Hui Li[5]

Abstract The tools of E-Learning significantly are improved learning effect in current information technology. Learning tendency transfers static to dynamic and learning manner from passive transferred to initiative. Learning environment and space don't restrict. But, the learners often suffered interference and attracted by external things resulting to divert attention and reduce the learn benefit. Therefore, this paper uses the features of Virtual reality to design the VR learning materials. Learner use virtual reality equipment to study e-Learning material. That design can let learner immersed in learning environment and reduces diverts of attention to enhance learning effect. And, the game learning of interaction can cause learning interest and enable the learner unlimited time and space for enjoying the learning's pleasure.

Keywords: Virtual Reality, E-Learning, Multimedia Learning

[1,2,3,4,5] Department of Information Management, Tainan University of Technology, Taiwan
*E-mail: yuanhsunliao@gmail.com

Distance Teaching: Virtual Environment of Study

Sheng-Han Yen[1], Yu-Tung Wu[2], Yu-Ren Gong[3], Hsiao-Hui Li[4], Yuan-Hsun Liao*[5]

Abstract In today's teaching methods, distance teaching has been gradually becoming a trend that has changed the students learning way. Through the video teaching assist students to learn knowledge without leaving home. But, the lack of synchronous distance learning and interactive real-time will improved this end if we want to break the traditional distance learning. So, we design the realistic classroom teaching environment moved into the virtual network environment. Through VR technologies combine distance learning and classroom teaching mode to the VR classroom to achieve better learning effects. Students not only join the classroom teaching but also interactive with the teacher to enhance students learning. That can reduce the interference of the external environment and enhance the students' learning ability and concentration.

Keywords: Virtual Reality, Distance Teaching, Virtual Classroom

[1,2,3,4,5] Department of Information Management, Tainan University of Technology, Taiwan
*E-mail: yuanhsunliao@gmail.com

Land Arts, Aesthetics of Nature and Aesthetic Education

Chung Ping Yang*

Abstract There were a lots of festivals of land arts or earthwork arts hold at many cities in these years in Taiwan. They already became a kind of popular culture. The creation of land arts began from American in 1960' and expressed special meaning about what is the art and nature. But the government usually just followed trends of land arts, not really realized the spirit of them. Many artists put the work on the nature, not let the nature became a part of works, and introduced people to reflect meanings of nature or the relationship between human with nature. Most of people also didn't understand the content and meaning of land arts. In the aspect of appreciation, the research in contemporary aesthetics of nature may provide insightful directions for appreciating land arts. There are two models of cognitive approach and non-cognitive approach in the aesthetics of nature. The former stresses necessity of scientific knowledge, like ecology, biology and geography, the latter against cognitive model and more focuses on imagination, intuition, mystery and folktale. Both of them can afford basis for appreciation. This research aims at inquiry the meaning, content and related theories of land arts. The researcher will select some works of land arts and analyze their aesthetic qualities from perspectives of aesthetics of nature. Then, I will provide some implications for aesthetic education.

Keywords: Land Arts, Aesthetics of Nature, Aesthetic Education

Graduate Institute of Education, National Changhua University of Education, Taiwan
*E-mail: cpyang@cc.ncue.edu.tw

Work and Family Related Factors and Work-Family Conflict: The Moderating Role of Gender Role Orientation

Ting Ting Chang*

Abstract Gender difference has been one of the most concerned issues in research on work-family conflict which has attracted a lot of interest recently. However, the research findings are inconsistent partly with mistaken assumption of biopsychological equivalence. That is, biological sex is regarded as an equivalent of psychological gender identification so that it is inferred that men hold work roles and women hold family roles. To close the research gap mentioned above, we examine the moderating role of gender role orientation in the relationship between work-family conflict and its antecedents. Using structured questionnaires, a diverse sample of 317 full-time employees drawn from a variety of organizations in Taiwan was surveyed. We found that both workload and family responsibility were positively associated with work to family conflict (WFC). Family responsibility was positively related to family to work conflict (FWC), whereas family time was negatively to family to work conflict (FWC). Both masculine orientations and feminine orientations were negatively affected work to family conflict (WFC). Besides, masculine orientations and feminine orientations could moderate the relationship between family responsibility and family to work conflict (FWC). The findings can provide the importance of gender difference and sound advice for effective interventions in combating work-family conflict.

Keywords: Work and Family Conflict, Gender Role Orientation, Work Demands and Family Demands

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Lunghwa University of Science and Technology, Taiwan

*E-mail: tinapc@ms24.hinet.net

Lectric Thin Film Form Future Electron Devices Science and Technology

Abul Kashem Sheikh*[1], Mrs.Afroza Akbar[2], Mr.Iman Ali[3],.Md.Bepari Nobin[4]

Abstract Dielectric Thin film is a kind of film which is especially for future electron devices, Under the base of Science and Technology a dielectric thin film makes a great change amongst the electron devices. For instance any kind of micro change will be appropriate as well as suitable for sustainable in micro-electron devices. Today micro electron stands for the modern change also. All the Electron are related to the planet earth conphasizes on super kind of changes. Therefore, the people of Bangladesh also trying to reach the goal. This will work as a guiding manual for them and the basis of more advance research in the filed of electron devices. So it has to face the Challenges and find ways in the field of electron field to make all the oppose and thus go ahead the way to the sustainable dielectric thin film development

Keywords: Lectric Thin Film, Future Electron Devices

[1,2,3,4] Kathak Academy,UNCSOs(ECOSOC), Bangladesh
*E-mail: kashemakashem@yahoo.com

The Influence of Approaches to Learning of Office Workers on Organizational Change Readiness and Moderating Effects of LMX and TMX

AhJeong Hong*[1], MiOk Choi[2], Se-Yong Joo[3], YongJu Kim[4]

Abstract The purpose of this study is to find out the influence of approaches to learning in the workplace on organizational change readiness and to verify the moderating effect of LMX and TMX on the relationship between independent and dependent variables. Approaches to learning in the workplace is divided into deep approach, surface-rational approach, and surface-disorganized approach. A self-reporting survey were conducted for team members who were not in charge of team leadership in domestic company A.

Keywords: Approaches to Learning. Organizational Change Readiness, Leader-Member Exchange, Team-Member Exchange

[1,2,3,4] Chung-Ang University, Korea
*E-mail: ah454@cau.ac.kr

Effect of Organization Conflict on the Readiness of Organization Changes and Moderating Effect of Psychological Capital

YongJu Kim[1]*, Da-Gyeom Heo[2], Ah-Jeong Hong[3], Yong-Ju Kim[4]

Abstract This study aims to investigate the effect of organization conflict on the readiness of organization changes and to validate the psychological characteristics of the individuals on the mediating effect between the conflict and the readiness of organization changes. To do so, the conflicts in the organization were divided by relationship conflict that occurred in the personal relationship among the members and task conflict that occurred during the implementation of the tasks, to understand the relationship of effect on the readiness of organization changes that was a dependent variable.

Keywords: Relationship Conflict, Task Conflict, Readiness of Organization Change, Psychological Captial

[1,2,3,4] Chung-Ang University, Korea
*E-mail: yongjukim06@naver.com

Examining the Moderating Effect of Teaching Presence on User's Acceptance of MOOC in Korea

Rang Kim *

Abstract Massive open online course(MOOC) has spread worldwide. In the MOOC platform, learners can access learning resources provided by world-class universities and interact with an instructor and other learners in a MOOC class for free. Despite the benefits to the learners, retention rates overall are typically low(Greene, Oswald, & Pomerantz, 2015). Studies have recently focused on how to foster retention and achievement in MOOC. In the context of fostering MOOC retention, users' MOOC technology acceptance can be considered. Technology Acceptance Model(TAM) explains that users' perceived usefulness and perceived ease of use impact on the continuance intention to use(Davis, Bagozzi, & Warshaw, 1989). Findings of prior studies based on the TAM show the learners' individual technology fit construct can be explained as an exogenous variables of TAM and the perceived usefulness is a critical factor to explain learners' continuance intention of MOOC(Wu & Chen, 2017; Yang et al., 2017). However, researchers focused only on the relationship between learners' individual characteristic construct and the perceived usefulness. It has a limitation to find an implication for faculties to improve their educational service in detail. In this study, researchers focused on the role of teaching presence, the perception of the extent to which the online instructor provides course design and organization, facilitating discourse, and direct instruction(Garrison, Anderson, & Archer, 2001). The goal of the study is to analyze the moderating effect of teaching presence on the relationship between MOOC learners' task-technology fit and perceived usefulness. To achieve the goal, online survey was conducted to the learners of a course operated in K-MOOC Platform in 2017. The valid data from 252 learners are analyzed by hierarchical regression analysis. The results reveal that direct instruction and facilitating discourse moderate on the relationship between learners' task-technology fit and the perceived usefulness. By contrast, facilitating discourse do not play a mediating role on the relationship. The implications of the present findings for online learning research are suggested.

Keywords: MOOC, Online Learning, Technology Acceptance Model, Teaching Presence

Chung-Ang University, Korea
*E-mail: lovinrang@gmail.com

A Study on the Luxury Goods Counterfeiting in the view of the Infringement on Design Authenticity

Ching Chu Hung*

Abstract The counterfeiting activity remains a major issue in the luxury goods market of China. The samples from prominent international luxury goods are used and modified with identical design, material and pattern as to create an inexpensive version of the same luxury goods in order to generate profits from the market in China. This type of practice has caused a tremendous impact on the luxury industry worldwide and at the same time it has led to a very serious issue of infringement. The study aims at the resemblance and the controversy stirred up by the practice of counterfeiting luxury goods conducted in China. In the meantime, the Birkin from Hermes is used as the sample of the study along with ten luxury goods experts to discuss and to conduct the Delphi method so as to probe the legal issue generated by the counterfeit Birkin in the Chinese market in terms of its likeness. As the result of the study, the degree of resemblance between the Chinese counterfeit one and the authentic is above 90%, and it is the appearance, size, pattern and color which possess the highest degree in similarity. Conforming to the statement above, the study has compared the Intellectual Property Law between Japan and Taiwan in order to distinguish the difference as well as to further define and standardize the counterfeiting through the concept of design patent and trademark counterfeiting stated in the patent law, furthermore, the study has probed the confusion of consumers caused by the difficulty in the recognition between the authentic luxury goods and the fake one and the standard and the civil remedies caused by infringement.

Keywords: Design Authenticity, Luxury Goods Counterfeiting, Copyright, Delphi Method

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Kun Shan University, Taiwan

*E-mail: babystylist_755@hotmail.com

The 4th Industry Revolution and Bitcoin Adoption

Wonjun Lee*

Abstract In this paper, we analyze the issue centering on the fourth industry revolution and customer's attitude to adopt new alt-coin. The purpose of this study is to provide implications for business and marketing academics for understanding alt-coin and preparing the 4th industrial revolution. The newly initiated digital currencies proposed a change from the old and friendly financial systems. Nakamoto, an anonymous programmer, proposed Bitcoin in 2008, which is the first alt-coin. Bitcoin is not based on gold or dollar but a computer systems based on 'blockchain' technology. Since its first introduction, the price of Bitcoin has been soaring. The initial price of one Bitcoin was only $0.001 in 2009, and it is worth more than $14,000 in 2018. In general, Bitcoin lack intrinsic value and it is not the creation of any reliable government. It imposes no obligation for any financial intermediary to verify a user's true identity. Thus, the position of Bitcoin in market is not stable. Some people doubts whether it has any real intrinsic value. To answer the question, we collect empirical data in Korea and analyze the relationship between antecedents of Bitcoin and consumer intention. There are two different intentions of users regarding to Bitcoin. Bitcoin is both an asset and a currency. People can use Bitcoin to buy and sell product just like traditional currency. At the same time, Bitcoin is a speculative asset. Based on the previous researches on Bitcoin, we hypothesize the relationships between consumer intention and behavior when they make a decision to buy Bitcoin.

Keywords: Bitcoin, Alt-Con, E-Cash, Consumer Adoption, Currency, Asset, PLS-SEM

Cheongju University, Korea

*E-mail: meetme77@naver.com

An Empirical Study on the Effect of Visual Arts Appreciation Teaching on Children's Aesthetic Development

Lee-Chen Chen*

Abstract This study aims at exploring the effect of visual arts appreciation teaching on children's interest and feelings about watching artworks, perception and views on artistic work, and performance in art creation. In this study, 5 to 6-year-old children were chosen as subjects and works of artists as themes. First of all, a series of adaptive teaching materials for 16 teaching sessions on visual arts appreciation teaching for children were self-developed. These materials were later used in a four-month teaching program on a one session per week basis. In this empirical research, teaching records, interviews & questionnaires, and drawing paper were used to collect research data and record teaching process. Before teaching, a pretest on the subjects' interest and feelings about watching artworks, perception and views on artistic work, and performance in art creation was conducted. After teaching, a posttest of the same kind was conducted. Three months later, a delayed test was further conducted on the subjects. Lastly, the research data were concluded and compared with different research data by means of triangulation in order to increase the confidence of the study. As shown by the results, intervention of visual arts appreciation teaching has material effect on children's aesthetic development in terms of their feelings and perception on artistic work and performance in art creation therefore it is worth promoting and further exploring the value of visual arts appreciation teaching in early childhood education.

Keywords: Visual Arts Appreciation Teaching, Preschool Aesthetic Education

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Minghsin University of Science and Technology Country Repablic of China , Taiwan
*E-mail: kukuku_chen@hotmail.com

Cross- and Serial Correlation of Liquidity

Kuan-Hui Lee*

Abstract With the presence of empirical evidence of correlated liquidity, it is now of interest to investigate how and why liquidity transmits across stocks. Rather than dealing with liquidity as an exogenous factor, in a vector autoregressive framework, we find the existence of lead and lag patterns in liquidity in that past change of illiquidity of liquid stocks are positively correlated with current change of illiquidity of less liquid stocks. This relationship has been weakened in recent periods, reflecting the improvement of financial market efficiency over time. However, the liquidity spillovers are not restricted among fundamentally correlated stocks: While the liquidity spillovers within industry are significant, there is strong evidence that liquidity is affected more by the liquidity of stocks from other industries. This implies that the liquidity can be independently determined from price and the strategic trading of investors in a financial market is the source of liquidity spillovers. Empirical results in this paper are robust to various lag specifications, stock sorting schemes, data frequencies (daily and weekly), and weighting schemes (equal- and value-weight).

Keywords: Cross- and Serial Correlation

Seoul National University, S. Korea
*E-mail: kuanlee@snu.ac.kr

Track B: Engineering and Technology, Computer, Basic and Applied Sciences

Effect of Lattice Relaxation on Thermal Conductivity Prediction Via Molecular Dynamics Simulations: Study on Fcc-Based Structures

Min Young Ha[1], Dong Hyun Kim2, Ji Ho Ryus[3], Won Bo Lee*[4]

Abstract This work studies the computational details of molecular dynamics (MD) thermal conductivity prediction with Green-Kubo method. Little consensus has been made among researchers about the choice of lattice parameter in MD thermal conductivity calculation, leading to mutually disagreeing reports. Simulations on fcc-based structures with different lattice parameters were performed to calculate lattice thermal conductivities, heat current autocorrelation functions, and phonon density of states. The results were compared to experimental reports and ab initio calculations to conclude that lattice volume relaxation in isobaric-isothermal (NpT) ensemble is crucial for accurate prediction of thermal conductivity. In addition, effect of domain size and interatomic potential cutoff distance was also studied in the context of lattice relaxation, and it was verified that conventional choice of cutoff distance may result in underestimation of thermal conductivity. After analyzing the size and cutoff dependence of lattice parameter, a new criterion for cutoff distance was suggested. Simulations were performed with the newly developed simulation parameters, and showed improved agreement with experimental and ab initio results.

Keywords: Lattice Relaxation ,Thermal Conductivity

[1,2,3,4]Seoul National University, Korea
*E-mail: wblee@snu.ac.kr

First Principles Calculations of Thermoelectric Properties of Bi2Te3 and PbTe

Hyo Seok Kim[1], Jung Gun Bae[2], Won Bo Lee*[3]

Abstract We presented first-principle calculations of electron and phonon transport in Bi2 Te3 and PbTe. We focused on the several thermoelectric properties; Seebeck coefficient, electrical conductivity, electrical thermal conductivity and lattice thermal conductivity. The electronic transport is calculated using the projector augmented wave (PAW) method implemented in Vienna Ab-initio Simulation Package (VASP) and Boltzmann transport equation (BTE). From electronic transport, the Seebeck coefficient can be estimated by simple expression containing band-gap energy. From phonon transport, we calculated the interatomic force constants (IFCs) along with a fully iterative solution of phonon-BTE. This approach allows both harmonic and anharmonic interatomic forces to be contained into the result. The calculated lattice thermal conductivity was found to be in good agreement with experimental data. We discussed that the first-principle methodology can be a tool to understand the transport details in many solid-state devices.

Keywords: Thermoelectric, DFT, BTE

[1,2,3,4] Seoul National University, Korea
*E-mail: wblee@snu.ac.kr

Theoretical Prediction of the Electronic Transport Properties of the Al-Cu Alloys Based on the First-Principle Calculation and Boltzmann Transport Equation

Garam Choi[1], Ji Woong Yu[2], Jiyeong Cho[3], Won Bo Lee*[4]

Abstract Metal alloys, especially Al-based, are commonly-used materials for various industrial applications. In this paper, the Al-Cu alloys with varying the Al-Cu ratio were investigated based on the first-principle calculation using density functional theory. And the electronic transport properties of the Al-Cu alloys were carried out using Boltzmann transport theory. From the results, the transport properties decrease with Cu-containing ratio at the temperature from moderate to high, but with non-linearity. It is inferred by various scattering effects from the calculation results with relaxation time approximation. For the Al-Cu alloy system, where it is hard to find the reliable experimental data for various alloys, it supports understanding and expectation for the thermal electrical properties from the theoretical prediction.

Keywords: Metal Alloy, Thermal Conductivity, Electrical Resistivity, Boltzmann Transport Equation, First-Principles Calculation

[1,2,3,4] Seoul National University, Korea
*E-mail: wblee@snu.ac.kr

Interfacial Structure Analysis for the Morphology Prediction of Adipic Acid Crystals from Aqueous Solution

Minhwan Lee[1], Bumjoon Seo[2], Seulwoo Kim [3], Won Bo Lee*[4]

Abstract In aqueous solution, adipic acid crystals have a hexagonal plate morphology with a dominant (100) face, where the hydrogen-bonding carboxylic acid groups are exposed. In the present work, the crystal morphology was investigated by interfacial structure. The key external habit-controlling factor turned out to be the concentration of effective growth units at the interface by molecular dynamics simulations at the crystal−solution interface. The differences of two factors from the interfacial structure analysis that determine the concentration of the effective growth units explained why faces of (002), (100), and (011) are experimentally observed and faces of (11-1), (10-2), and (20-2) are not. The observed faces were characterized by larger values of both the surface molecular orientation factor and scaling factor, high free energy barriers for reorientation on these faces and implying low anisotropic local concentrations at the interface, respectively. Furthermore, factors of spiral geometry were incorporated into the original approach which resulted in a close resemblance to the experimental morphology.

Keywords: Crystallization, Free energy surface, Morphology

[1,2,3,4] Seoul National University, Korea
*E-mail: wblee@snu.ac.kr

A Study on Personal Information Infringement Measures of Mobile Augmented Reality System

Mr Dong-Seung Geum*[1], Nam-Jeong Kim[2], Gang-Soo Lee[3]

Abstract With the recent popularization of smartphones, existing services have undergone many changes and the information sharing environment is developing rapidly to cope with changes. Therefore, various methods are used to provide information to the user. In recent years, the age of augmented reality, in which reality is combined with virtual reality to give users a high level of immersion, is actively researched. Augmented reality provides various information visually based on active participation of users. Due to these factors, a variety of mobile contents based on augmented reality are gaining popularity. However, augmented reality is increasing the content based on user's personal information in order to provide various information, and accordingly the threat of personal information is increasing. Especially, in case of mobile augmented reality, many kinds of sensitive personal information infringement cases are taking place because users often provide various contents using location information. Therefore, in this paper, to reduce the threat of personal information that may occur in a mobile augmented reality system. As a result, the scope of the threat is designated and the threat item is specified. We also want to find out if there are any security requirements necessary to respond to the threat and to study ways to minimize the threat.

Keywords: Augmented Reality, Mobile Augmented Reality, Personal Information, Information Protection

[1,2,3] Hannam University, Korea
*E-mail: vanillamaru@gmail.com

A Study on Smartphone Security Threat through Content Modulation of Bidirectional Digital Signage

Jae-Ung Lee*[1], Rae-young Jang[2], Woo-young Soh[3]

Abstract Digital signage, regarded as the fourth media revolution following TV, computers, and mobile phones, refers to a digital billboard that that provides information, entertainment, and advertisement. From the first generation digital signage that transforms existing outdoor advertisements into digital displays such as signs, posters, and signboards to the second-generation that customized information by interacting with customers, digital signage is actively being commercialized in today's world. In this paper, we will examine the security threats to smartphones that happens when content of bidirectional digital signage is tampered.

Keywords: Digital Signage, Smartphones, Bi-directional, Security, Personal Information

[1,2,3] Hannam University, Korea
*E-mail: leejaeung1990@gmail.com

Study of Hemodynamic Responses Induced by Olfactory Stimulation Using Multivariate Empirical Mode Decomposition

Po-Lei Lee*[1], Kuo-Wai Wang[2], Kuo-Kai Shyu[3]

Abstract Olfactory sensation is crucial in our daily life. It affects our mood, behavior, autonomous function, immune system, and provides information for sensing hazard environment. It has been found that olfactory dysfunction is along with several clinical neurodegenerative diseases, such as Alzheimer's disease, multiple sclerosis, degenerative ataxias, Parkinson's disease, etc. Nevertheless, diverse activation areas were reported in different papers owing to the inter-individual difference in sensing chemosensory stimulation. Traditional functional magnetic resonance imaging technique (fMRI), like SPM, utilizes paradigm-based linear correlation and statistical techniques to discriminate activation areas from background activities which ignores the effects of smell fatigue, attention, and conscious levels. Therefore, we adopted multivariate empirical mode decomposition (MEMD) to extract olfactory-related features in MRI BOLD signals. The MEMD was proposed by Rehman and Mandic which acts as a data-driven approach to extract common features in multi-channel data matrix. The MEMD is an improved approach to expand traditional empirical mode decomposition (EMD) from one channel to multi-channel processing by generating multiple N-dimensional envelopes and taking signal projections along different directions in N-dimensional spaces. We took time series of BOLD signals from each slice image for MEMD processing, and the reconstructed slice images were processed by SPM to find fMRI activation areas. It has been demonstrated that the MEMD enables common features of different scales in an image slice to be arranged in distinct IMFs, so that the task-related signals can be selected and reconstructed. With the help of MEMD, unexpected spiky noises were removed and spurious activations were suppressed.

Keywords: Functional Magnetic Resonance Imaging, Olfactory, Multivariate Empirical Mode Decomposition

[1,2,3] National Central University, Taiwan
*E-mail: pllee@ee.ncu.edu.tw

Track C: Medical, Medicine and Health Sciences

Persistence of Varicella Zoster Virus in Saliva and Postherpetic Neuralgia in Patients with Herpes Zoster

Seong Yeon Park*[1], JiYeun Kim[2], Jisoo Kwon[3], Sun-Mi Kim[4], Min-Chul Kim[5], Sung-Han Kim[6]

Abstract Background: Herpes zoster (HZ) is caused by the reactivation of latent Varicella zoster virus (VZV) in sensory trigeminal and dorsal root ganglia. Reactivated VZV replicates in the skin and produces the characteristic HZ rash, which is accompanied by acute pain and often by postherpetic neuralgia (PHN).VZV DNA is present in the saliva of patients with HZ. In addition, there was a positive correlation between the presence of VZV DNA and pain. Thus, we evaluate the usefulness of saliva for the detection of VZV in patients with HZ, and then analyze the relationship of persistence of saliva VZV DNA and PHN. Material/methods: We enrolled patients with a suspected HZ prospectively between May 2016 and October 2016 in two Korean Hospitals. Saliva samples were collected on day 1 before antiviral therapy and again on day 8, 15, and 29. Saliva VZV DNA was detected by real-time PCR. Early convertor was defined as saliva VZV DNA was disappeared within day 15, if saliva VZV DNA was persisted after day 15, it was considered as late convertor. Results: During study period, 61 patients were performed saliva sampling. Among them, 34 were HZ,22 control patients, 4 zoster sine herpete, and 1 chickenpox. Median age of HZ patient was 53 (IQR 43.3 – 60.3). The most common HZ site was cranial nerve 5. PHN was developed in 10 of 34 patients (29.4%). VZV was detected in saliva from 33 of 34 patients with HZ on day 1. None of VZV was detected in control patients. The sensitivity and specificity of saliva VZV DNA on day 1 was 97.1%(95% Confidence interval [CI], 84.7 – 99.9%) and 100% (95% CI, 84.6 – 100%). There was a positive correlation between patient age and saliva VZV DNA load on day 1 (Spearman correlations 0.366, p = 0.033). For 15 of 34 patients, follow up data were available. Saliva VZV DNA load over time was as follows; Day 1 (2.43, IQR 1.87 – 3.05), day 8 (2.04, IQR 0 – 2.96), day 15 (0, IQR 0 – 1.45), and day 29 (0, IQR, 0 – 1.77). Late convertor was 5 of 15 (33.3%). Late convertor was older (median age in years, 50.5 vs 60.0, p = 0.02) and associated with more PHN (10.0% vs 80.0%, p = 0.02). Patients with PHN were older (median age in years, 48.0 vs 62.5, p = 0.01) and more frequent in late convertor (10.0% vs 80.0%, p = 0.02). Conclusions: Our findings demonstrate the usefulness of saliva for the detection VZV in patients with HZ. Saliva VZV DNA load was correlated with age. However, saliva VZV DNA load was not associated with PHN. The longer the virus persisted in the saliva, the more PHN occurred.

Keywords: Varicella Zoster Virus, Saliva, Postherpetic, Neuralgia

[1] Dongguk University Ilsan Hospital, Goyang, Republic of Korea, [2,3,4,5,6] Asan Medical Center, University of Ulsan College of Medicine, Seoul, Korea
*E-mail: psy99ch@hanmail.n

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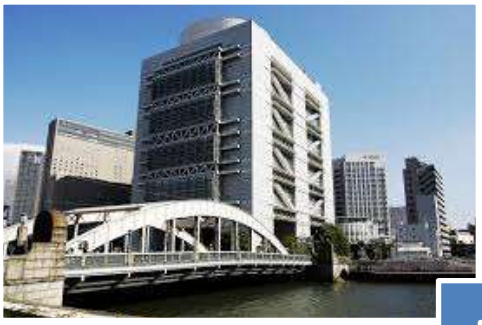

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