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WELCOME

Dear distinguished delegates,

We are pleased to welcome you to the 3rd International Conference on Communication Engineering and Technology (ICCET 2020) and the 8th International Conference on Communications and Broadband Networking (ICCBN 2020).

The objective of the conference is to bring together interested academics and industry experts in the field of Communication Engineering and Technology, Communications and Broadband Networking to a common forum. The evaluation of all the papers was performed based on the reports from anonymous reviewers, who are qualified in their field.

We'd like to express our sincere gratitude to everyone who has contributed to this conference as its success could have only been achieved through a team effort. A word of special welcome is given to our keynote and invited speakers who are pleased to make contributions to our conference and share their new research ideas with us. They are Prof. Moshe Zukerman from City University of Hong Kong, Prof. Guu-Chang Yang from National Chung Hsing University, Taiwan, Prof. Jalel Ben-Othman from University of Paris 13, France, Prof. Edmund Lai from Auckland University of Technology, New Zealand, Prof. Tetsuya Shimamura from Saitama University, Japan and Senior Lecturer Syed Faraz Hasan from Massey University, New Zealand. Additionally, our special thanks go to all committee members for their excellent work in reviewing the papers and their other academic support efforts.

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. We are dedicated to higher and better international conference experiences. We will sincerely listen to any suggestion and comment. Wish you will enjoy this conference, contribute effectively toward it and take back with your knowledge, experiences, contacts and happy memories of these days.




We look forward to meeting you again next time!

Yours sincerely,

Organizing Committee

AGENDA OVERVIEW

* All schedules will process in **Paris local time** - Greenwich Mean Time (GMT)+2

April 15, 2020 (Wednesday)		
09:00-14:00	Q&A Zoom	Zoom Link: https://zoom.com.cn/j/318898238 Zoom ID: 318 898 238
09:30-11:15	Keynote & Invited Speeches Test Presentation	Zoom Link: https://zoom.com.cn/j/225264569 Zoom ID:225 264 569
10:00-13:00	Authors Test Presentation	Zoom Link: https://zoom.com.cn/j/903473404 Zoom ID: 903 473 404
April 16, 2020 (Thursday)		
08:30-15:00	Q&A Zoom	Zoom Link: https://zoom.com.cn/j/318898238 Zoom ID: 318 898 238
09:00-11:30	Opening & Keynote Speeches	Zoom Link: https://zoom.com.cn/j/580023925 Zoom ID: 580 023 925
11:30-12:30	 Break	
12:30-14:45	Session 1- Communication and Information Engineering	Zoom Link: https://zoom.com.cn/j/466148731 Zoom ID: 466 148 731
April 17, 2020 (Friday)		
08:30-15:30	Q&A Zoom	Zoom Link: https://zoom.com.cn/j/318898238 Zoom ID: 318 898 238
09:00-10:30	Invited Speeches	Zoom Link: https://zoom.com.cn/j/381476844 Zoom ID: 381 476 844
10:30-11:00	 Break	
11:00-12:00	Panel Session - How Can We Use the Technology to Defend from COVID-19	
12:00-13:00	 Break	
13:00-15:00	Session 2- Computer Science and Information Technology	Zoom Link: https://zoom.com.cn/j/737845246 Zoom ID: 737 845 246
April 18, 2020 (Saturday)		
09:00-16:00	Recorded Presentation Display	Zoom Link: https://zoom.com.cn/j/623336172 Zoom ID: 623 336 172

GUIDELINE

Presentation Guideline

Time Zone

Considering the time zone differences of participants, all schedules will process in **Paris local time - Greenwich Mean Time (GMT)+2**.

Please check on the program for your own test time and formal presentation time, and then exchange it to the local time in your country.

Equipment needed:

- * A computer with an internet connection (wired connection recommended)
- * USB plug-in headset with a microphone (recommended for optimal audio quality)
- * Webcam (optional): built-in or USB plug-in

Environment requirement

- * Quiet Location
- * Stable Internet Connection
- * Proper lighting

Presentation Tips

- ❖ Get your presentation PPT/Video files prepared. To effectively control the time and avoid some unexpected situations, we suggest you send us the recorded video in advance as a backup.
- ❖ Regular oral presentation: 15 minutes (including Q&A). The Video/presentation should be within 12 minutes, 3 minutes for Q&A.
 1. Presenter records a video introduction with their own image, speaking to the camera, introducing themselves: name, affiliation, brief description of scope of their work.
 2. Presenter then switches to their slides and provides a voiceover describing images in each slide.
- ❖ Your punctual arrival and active involvement in each session will be highly appreciated. Attention please: The conference will be recorded. Your proper behavior will be highly appreciated.
- ❖ One Best Presentation will be selected from each parallel session by the session chair and the author of best presentation will be announced at the end of each session.
- ❖ Certificate of Presentation will be sent to your email address after the conference.

Copyright

1. The whole conference will be recorded. Only the host can get permission the record.
2. The video or audio recording(s) may be edited, copied, and/or displayed on the office conference website for public broadcast or for any lawful purpose.
3. Participants will not allow recording other presenters' presentation nor distributing it to or share with anyone unless the presenter gives written consent of agree. If someone failure to do so will be considered a serious academic violation subject to disciplinary/ lawful action.
4. The host totally respect all the presenters' copyright. If you need to record your own presentation, please do inform our host in advance.

GUIDELINE


Zoom Guideline

Learn the zoom skills, please visit:


<http://www.iccet.org/zoom/>


<http://www.iccban.org/zoom/>

How to use ZOOM:

 **Step 1:** Download Zoom from the link: <https://zoom.us/download>


 **Step 2:** Sign up an account

 **Step 3:** Set up the languages and do some basic test.

 **Step 4:** Click the Join, paste the meeting Link or ID, then you can join the conference. (The room will be opened on April 15th, 16th, 17th, 18th. The meeting rooms will be open half an hour before each session. Please enter the room at least ten minutes in advance.)

 **Step 5:** Get familiar with the basic functions: Rename, chat, raise hands, and screen share, etc.

The most important function is share screen. You will use it for your online presentation.

 **Step 6:** On April 15th, we will instruct you to use ZOOM and the functions mentioned above in test presentation. Please download ZOOM and sign it up, then you can join the conference.

If you are prompted for a SMS verification code in the registration, you need to choose “China 86+ Your Country ID + Phone Number”.

Please note:

1. Each Presentation will be recorded. If you don't want it, please inform our staff ahead of time.
2. If you have any question in test and formal sessions, please join in the Back Up Room.

Zoom Link: <https://zoom.com.cn/j/318898238>

Zoom ID: 318 898 238

DETAILED AGENDA

* All schedules will process in **Paris local time** - Greenwich Mean Time (GMT)+2

April 15, 2020 (Wednesday)-Test Presentation		
09:00-14:00	Q&A Zoom	Zoom Link: https://zoom.com.cn/j/318898238 Zoom ID: 318 898 238
Keynote & Invited Speeches Zoom Link: https://zoom.com.cn/j/225264569 Zoom ID:225 264 569		
Paris Local Time	Presenter's Local Time	Presenter
08:30-08:45	19:30-19:45	Opening-Dr. Jeff Kilby Auckland University of Technology, New Zealand
08:45-09:00	14:45-15:00	Prof. Moshe Zukerman City University of Hong Kong, Hong Kong
09:00-09:15	15:00-15:15	Prof. Guu-Chang Yang National Chung Hsing University, Taiwan
09:15-09:30	09:15-09:30	Prof. Jalel Ben-Othman University of Paris 13, France
09:30-09:45	20:30-20:45	Prof. Edmund Lai Auckland University of Technology, New Zealand
09:45-10:00	16:45-17:00	Prof. Tetsuya Shimamura Saitama University, Japan
10:00-10:15	21:00-21:15	Senior Lecturer Syed Faraz Hasan Massey University, New Zealand
Session 1- Communication and Information Engineering Zoom Link: https://zoom.com.cn/j/903473404 Zoom ID: 903 473 404		
Paris Local Time	Presenter's Local Time	Presenter
10:00-10:05	17:00-17:05	N1-018
10:05-10:10	16:05-16:10	N1-023
10:10-10:15	16:10-16:15	N1-008
10:15-10:20	16:15-16:20	N1-014
10:20-10:25	17:20-17:25	N1-011
10:25-10:30	16:25-16:30	N1-024
10:30-10:35	16:30-16:35	N2-007
10:35-10:40	10:35-10:40	N1-020
10:40-10:45	16:40-16:45	N2-011

DETAILED AGENDA

Session 2- Computer Science and Information Technology

Zoom Link: <https://zoom.com.cn/j/903473404>

Zoom ID: 903 473 404

Paris Local Time	Presenter's Local Time	Presenter
11:00-11:05	17:00-17:05	N1-016
11:05-11:10	17:05-17:10	N1-002
11:10-11:15	17:10-17:15	N2-003
11:15-11:20	17:15-17:20	N2-015
11:20-11:25	17:20-17:25	N2-008
11:25-11:30	14:55-15:00	N1-010
11:30-11:35	15:00-15:05	N1-005
11:35-11:40	17:35-17:40	N2-001

April 16, 2020 (Thursday) - Formal Presentation

08:30-15:00

Q&A Zoom

Zoom Link: <https://zoom.com.cn/j/318898238>

Zoom ID: 318 898 238

Opening & Keynote Speeches

Zoom Link: <https://zoom.com.cn/j/580023925>

Zoom ID: 580 023 925

Paris Local Time	Presenter's Local Time	Presenter
09:00-09:10	20:00-20:10	Opening - Dr. Jeff Kilby Auckland University of Technology, New Zealand
09:10-09:50	15:10-15:50	Prof. Moshe Zukerman, IEEE Fellow City University of Hong Kong, Hong Kong
09:50-10:30	15:50-16:30	Prof. Guu-Chang Yang National Chung Hsing University, Taiwan
10:30-10:50		Break
10:50-11:30	10:50-11:30	Prof. Jalel Ben-Othman University of Paris 13, France

Session 1- Communication and Information Engineering

Chaired by Assoc. Prof. Asim Ali Khan

Sant Longowal Institute of Engineering and Ttechnology Longowal, India

Zoom Link: <https://zoom.com.cn/j/466148731>

Zoom ID: 466 148 731

Paris Local Time	Presenter's Local Time	Presenter
12:30-12:45	19:30-19:45	N1-018

DETAILED AGENDA

12:45-13:00	18:45-19:00	N1-023
13:00-13:15	19:00-19:15	N1-008
13:15-13:30	19:15-19:30	N1-014
13:30-13:45	20:30-20:45	N1-011
13:45-14:00	19:45-20:00	N1-024
14:00-14:15	20:00-20:15	N2-007
14:15-14:30	14:15-14:30	N1-020
14:30-14:45	20:30-20:45	N2-011
April 17, 2020 (Friday) - Formal Presentation		
08:30-15:30	Q&A Zoom	Zoom Link: https://zoom.com.cn/j/318898238 Zoom ID: 318 898 238
Invited Speeches & Panel Session - How Can We Use the Technology to Defend from COVID-19 Zoom Link: https://zoom.com.cn/j/381476844 Zoom ID: 381 476 844		
Paris Local Time	Presenter's Local Time	Presenter
09:00-09:30	20:00-20:30	Prof. Edmund Lai, FIET, SMIEEE Auckland University of Technology, New Zealand
09:30-10:00	16:30-17:00	Prof. Tetsuya Shimamura Saitama University, Japan
10:00-10:30	21:00-21:30	Senior Lecturer Syed Faraz Hasan Massey University, New Zealand
10:30-11:00	Break	
11:00-12:00	Panel Session How Can We Use the Technology to Defend from COVID-19 Chaired by - Prof. Jalel Ben-Othman, University of Paris 13, France	
Panelist: Dr. Jeff Kilby, Auckland University of Technology, New Zealand Prof. Moshe Zukerman, City University of Hong Kong, Hong Kong Prof. Edmund Lai, Auckland University of Technology, New Zealand Prof. Tetsuya Shimamura, Saitama University, Japan Senior Lecturer Syed Faraz Hasan, Massey University, New Zealand Assoc. Prof. Dan Michael A. Cortez, Technological Institute of the Philippines-Quezon City Campus, Philippines		

DETAILED AGENDA

Session 2- Computer Science and Information Technology

Chaired by

Assoc. Prof. Dan Michael A. Cortez

Technological Institute of the Philippines-Quezon City Campus, Philippines

Zoom Link: <https://zoom.com.cn/j/737845246>

Zoom ID: 737 845 246

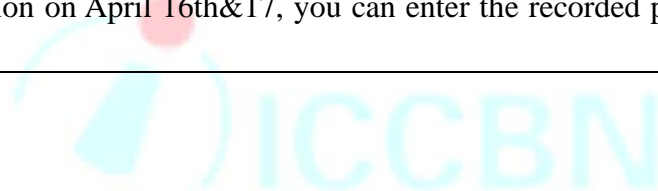
Paris Local Time	Presenter's Local Time	Presenter
13:00-13:15	19:00-19:15	N1-016
13:15-13:30	19:15-19:30	N1-002
13:30-13:45	19:30-19:45	N2-003
13:45-14:00	19:45-20:00	N2-015
14:00-14:15	20:00-20:15	N2-008
14:15-14:30	17:45-18:00	N1-010
14:30-14:45	18:00-18:15	N1-005
14:45-15:00	20:45-21:00	N2-001

April 18, 2020 (Saturday) | 09:00-16:00- Recorded Presentation Display

Zoom Link: <https://zoom.com.cn/j/623336172>

Zoom ID: 623 336 172

The authors' presentation will be recorded. If you are interested in the certain presentation or you missed the presentation on April 16th&17, you can enter the recorded presentation display room on April 18.



KEYNOTE SPEAKER

Formal Keynote Speech - April 16, 2020

Zoom Link: <https://zoom.com.cn/j/580023925>

Formal Zoom ID: 580 023 925



Prof. Moshe Zukerman, IEEE Fellow
City University of Hong Kong, Hong Kong

Paris Local Time (GMT+2): 09:10-09:50

Hong Kong Local Time (GMT+8): 15:10-15:50

Speech Title--- Optimization Problems in Modern Telecommunications Networks Design

Speech Abstract--- Throughout the evolution of the internet, certain key features that have

been identified as important characteristics of modern telecommunications networks. One such feature is the use of layered data transport which is essential for the efficient operation of the internet. Another such feature is the use of long-haul cables that enable data transmission in a fraction of a second over thousands of kilometers. Optimization solutions for design and dimensioning of multilayered networks rarely considered the effect of variable rate traffic streams, and cable path planning is normally done by manually meter-by-meter based on experience and knowledge of experts. In this presentation, I will describe recently developed approaches in both research areas of optimizing resource allocation of multi-layered networks considering realistic traffic models based on long range dependent processes and multi objective optimization of cable path planning with consideration to cost-risk tradeoff and realistic design consideration and based on real data. This work was funded by HK RGC grants CityU123012, CityU11200417 and CityU8/CRF/13G.

BIO: Moshe Zukerman received his B.Sc. in Industrial Engineering and Management and his M.Sc. in Operation Research from Technion - Israel Institute of Technology and a Ph.D. degree in Engineering from The University of California Los Angeles in 1985.

Dr. Zukerman was an independent consultant with IRI Corporation and a post-doctoral fellow at UCLA during 1985-1986. In 1986 he moved to Australia and joined Telecom Australia. During 1986-1997 he served in Telecom (Telstra from 1993) Research Laboratories (TRL), first as a research engineer and between 1988-1997 as a project leader managing a team of researchers providing expert advice to Telstra on network design and traffic engineering, and on traffic aspects of evolving telecommunications standards.

He was a co-recipient of the TRL Outstanding Achievement Award in 1990.

Between 1990-2001, he also taught and supervised graduate students at Monash University. Between 1997-2008 he was with The University of Melbourne, as a senior research fellow (1997-1998), associate professor (1998-2001), and professor (2001-2008). Since December 2008 he has been with the Electronic Engineering Department of City University of Hong Kong and as a Chair Professor of Information Engineering and a team leader.

He has served on editorial boards of various journals, and as member of technical and organizing committees of numerous national and international conferences. He gave tutorials in several major international conferences such as IEEE ICC and IEEE GLOBECOM. He submitted contributions to and represented Australia in several ITU-T/CCITT standards meetings. Professor Zukerman has over 400 publications in scientific journals and conference proceedings and has been awarded several national and international patents. He has been an IEEE Fellow since 2007.

KEYNOTE SPEAKER

Formal Keynote Speech - April 16, 2020

Zoom Link: <https://zoom.com.cn/j/580023925>

Formal Zoom ID: 580 023 925



Prof. Guu-Chang Yang, IEEE Fellow
National Chung Hsing University, Taiwan

Paris Local Time (GMT+2): 09:50-10:30

Hong Kong Local Time (GMT+8): 15:50-16:30

Speech Title--- Channel Hopping Schemes in Relay Cognitive Ad Hoc Radio Networks

Speech Abstract--- The demand of spectral resources will grow tremendously in order to support the huge number of mobile devices in 5G wireless systems. Cognitive radio (CR) becomes an attractive technology to alleviate the spectrum scarcity and efficiency problems. Channel hopping (CH) is a representative technique in the rendezvous processes that can enhance spectral efficiency and is robust against interference in cognitive radio networks. In this talk, the fundamentals of CH sequence designs in CR ad hoc networks are overviewed, including basic definitions, operating modes, and design criteria and metrics. The desirable characteristics of CH sequences that support low media-access latency, large cardinality, and media-access fairness for cognitive radio ad hoc networks (CRAHNs) are outlined. Due to the limitation of transmission range of the two devices in CRAHNs, there is the need for intermediate node(s) to relay if the distance between them are too far away to rendezvous to each other directly. Some technical issues in such a cognitive radio networks via relay are discussed.

BIO: Guu-Chang Yang received the B.S. degree from the National Taiwan University, Taipei, Taiwan, in 1985, and the M.S. and Ph.D. degrees from the University of Maryland, College Park, MD, in 1989 and 1992, respectively, all in electrical engineering.

From 1988 to 1992, he was a Research Assistant in the System Research Center, University of Maryland. In 1992, he joined the faculty of the National Chung Hsing University, Taichung, Taiwan, where he is currently a Chair Professor with the Department of Electrical Engineering and the Graduate Institute of Communication Engineering. He was the Chairman of the Department of Electrical Engineering from 2001 to 2004. He co-authored the first-of-its-kind technical book on optical coding theory and its applications to code-division multiple access (CDMA), *Prime Codes with Applications to CDMA Optical and Wireless Networks* (Norwood, MA: Artech House), in 2002. He contributed one chapter on optical codes to another technical book, *Optical Code Division Multiple Access: Fundamentals and Applications* (Boca Raton, FL: Taylor & Francis), in 2006. In 2013, he coauthored a classical reference book, *Optical Coding Theory with Prime* (NY: CRC Press). His research interests include wireless and optical communication systems, modulation and signal processing techniques, and applications of CDMA.

Dr. Yang received the Distinguished Research Award from the National Science Council in 2004 and 2014, and the Outstanding Young Electrical Engineer Award and the Distinguished Electrical Engineering Professor Award from the Chinese Institute of Electrical Engineering in 2003 and 2012, respectively. He also received the Best Teaching Award from the Department of Electrical Engineering, National Chung Hsing University from 2001 to 2004 and in 2008. He served as the Chairman of the IEEE Communications Society (Taipei Chapter) from 2013 to 2014, the Vice Chairman of the IEEE Communications Society (Taipei Chapter) from 2011 to 2012, the Chairman of the IEEE Information Theory Society (Taipei Chapter) from 2003 to 2005, and the Vice Chairman of the IEEE

KEYNOTE SPEAKER

Formal Keynote Speech - April 16, 2020

Zoom Link: <https://zoom.com.cn/j/580023925>

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Information Theory Society (Taipei Chapter) from 1999 to 2000. He also served as the Area Coordinator of the Ministry of Science and Technology's Telecommunications Program in 2014, the Area Coordinator of the National Science Council's Telecommunications Program from 2012 to 2013, and the Co-Coordinator of the National Science Council's National Networked Communication Program from 2010 to 2014. He became an IEEE Fellow in 2012 for contributions to optical CDMA. He is currently an Associate Editor of the IEEE TRANSACTIONS ON COMMUNICATIONS, and serves as the Co-Coordinator of the Ministry of Science and Technology's Development and Applications of Advanced Communications Networking Technologies Program from 2014 to 2018 and Coordinator of the Ministry of Education's A Talent Cultivation Program for 5G Mobile Broadband Technology from 2018 to 2021.



KEYNOTE SPEAKER

Formal Keynote Speech - April 16, 2020

Zoom Link: <https://zoom.com.cn/j/580023925>

Formal Zoom ID: 580 023 925



**Prof. Jalel Ben-Othman, IEEE VTS Distinguished Lecturer
University of Paris 13, France**

Paris Local Time (GMT+2): 10:50-11:30

Speech Title--- Future Mobility Trends : New Ways and Vulnerabilities

Speech Abstract--- Since the last two decades, new ways of mobility were developed. It started by an important modification of Vehicle with the introduction of driving assistance and today with the self driving (Uber cars, Google car). At the same time Aerial vehicle were developed in order to reduce the traffic jams and to reduce the distances. All those new mobility trends were possible due to the development of new sensors and wireless connections. Wireless and mobile networks have many advantages as easy deployment, user mobility and provides network access to users regardless to their locations. The most critical problems that arise in these networks are on the resource allocations as the bandwidth is limited, the propagation (multi-path, fading, distortion) and security since communications are transmitted over radio waves. In this keynote, new mobility trends will be presented with a focus on VANETs UAVs and Self driving cars. The vulnerabilities will be presented as well specifically the availability issues in those networks and architecture will be pointed out.

BIO: Prof. Ben-Othman received his B.Sc. and M.Sc. degrees both in Computer Science from the University of Pierre et Marie Curie, (Paris 6) France in 1992, and 1994 respectively. He received his PhD degree from the University of Versailles, France, in 1998. He is currently full professor at the University of Paris 13 since 2011 and member of L2S lab at CentraleSupélec. Dr. Ben-Othman's research interests are in the area of wireless ad hoc and sensor networks, VANETs, IoT, performance evaluation and security in wireless networks in general. He was the recipient of the IEEE COMSOC Communication Software technical committee Recognition Award in 2016, the IEEE computer society Meritorious Service Award in 2016, and he is a Golden Core Member of IEEE Computer Society, AHSN Exceptional Service and Contribution Award in 2018 and the VEHCOR Fabio Neri award in 2018. He is currently in steering committee of IEEE Transaction on Mobile computing (IEEE TMC), a senior Editor of IEEE communication letters (IEEE COMML) an editorial board member of several journals (IEEE Networks, JCN, IJCS, SPY, Sensors, ...). He has also served as TPC Co-Chair for IEEE Globecom and ICC conferences and other conferences as (WCNC, IWCMC, VTC, ComComAp, ICNC, WCSP, Q2SWinet, P2MNET, WLN,....). He was the chair of the IEEE Ad Hoc and sensor networks technical committee January 2016-2018, he was previously the vice chair and secretary for this committee. He has been appointed as IEEE COMSOC distinguished lecturer from 2015 to 2018 and he is currently IEEE VTS distinguished lecturer where he did several tours all around the world. He is member of IEEE technical services board since 2016.

INVITED SPEAKER

Formal Invited Speeches - April 17, 2020

Zoom Link: <https://zoom.com.cn/j/381476844>

Zoom ID: 381 476 844



Prof. Edmund Lai, FIET, SMIEEE
Auckland University of Technology, New Zealand

Paris Local Time (GMT+2): 09:00-09:30
New Zealand Local Time (GMT+13): 20:00-20:30

Speech Title--- Application of Consistent Resampling Theory to Pilot Symbol Assisted Modulation

Speech Abstract--- In many communication signal processing applications, there is a need to resample digital signals. This process requires the digital signal to be first reconstructed as a continuous signal before resampling. Current theory assumes this continuous signal to be bandlimited. A new theory, known as consistent resampling, has been proposed by the author which does not have this band-limitation requirement. In this talk, the consistent resampling theory is introduced. It is then applied to the detection of Pilot Symbol Assisted Modulation (PSAM) which is a noisy resampling problem. In this case, the mobile channel is estimated from the noise corrupted data sequence and resampled so that the transmitted data can be recovered.

BIO: Professor Edmund Lai is currently head of department Information Technology and Software Engineering, School of Engineering, Computer and Mathematical Sciences, Auckland University of Technology, New Zealand. Before coming to AUT, Professor Lai worked at Massey for nine years in the School of Engineering and Advanced Technology. Before then, his career was like a bouncing ball – from Australia to Hong Kong and back again.

He completed his Bachelor of Engineering (Honours) in Electrical Engineering at the University of Western Australia. He returned to Hong Kong to work as a semiconductor test engineer, specialising in digital watch chips. Back in the early eighties, that was considered advanced work. Love drew him back to Perth though – his college girlfriend (now wife) lived there, and Professor Lai returned to University of Western Australia to complete his PhD. The topic was automatic speech recognition. That's where his career started to cross over between engineering, software and IT. After completing his PhD, he then returned to Hong Kong and worked at the Chinese University of Hong Kong in its newly opened information engineering department. Then, he returned to Perth again; this time to work and teach. He then worked as an independent consultant for a couple of years, developing industrial engineering training courses and writing optimization software for the mining industry in Australia.

Then at the year of 1999, by chance, on the way back to holiday in Hong Kong, he stopped in Singapore and decided to visit Nanyang Technological University. What he thought was a visit turned into an interview and a job offer. He stayed there until moving to New Zealand in 2006.

His research interests include Computer Communications Networks, Wireless Communications, Signal Processing, Information Engineering and Theory, Optimisation, Dynamical Systems in Applications, and Image Processing.

INVITED SPEAKER

Formal Invited Speeches - April 17, 2020

Zoom Link: <https://zoom.com.cn/j/381476844>

Zoom ID: 381 476 844



Prof. Tetsuya Shimamura
Saitama University, Japan

Paris Local Time (GMT+2): 09:30-10:00

Japan Local Time (GMT+9): 16:30-17:00

Speech Title--- A New Research Direction for Wireless Sensor Networks

Speech Abstract--- Wireless sensor network (WSN) is a self-organized distributed communication network, composed by a number of geographically separated, autonomous and low-cost sensor nodes with limited power and processing capability, which are cooperating with each other to connect and process data from the surrounding through wireless communication. To fulfill a common task, WSN cooperates through the wireless transmission medium. In recent years, WSN has attracted research interest because of its employment on land, underground, underwater and top of mountain, which are very wide. However, there are still obstacles to be more extensively employed. In this talk, some ideas are discussed for this purpose. Distributed estimation techniques are mainly considered and especially it is emphasized that blind equalization should be effectively utilized to develop further. Some demonstrations will be shown.

BIO: Tetsuya Shimamura received his B.E., M.E. and PhD degrees in Electrical Engineering from Keio University in Japan, in 1986, 1988 and 1991, respectively. In 1991, he joined Saitama University in Japan, where he is currently a Professor of Graduate School of Science and Engineering.

He was Head of Department of Information and Computer Sciences at Saitama University in 2012 and 2013, and Dean of Information Technology Center in 2014 and 2015. In 1995 and 1996, he joined Loughborough University, UK, and The Queen's University of Belfast, UK, respectively, as a visiting Professor.

His research interests are in digital signal processing and its applications to speech, audio, image and communication systems. A various range of research is covered such as speech analysis, speech enhancement, image quality assessment, image restoration, wireless communication, sensor network and cognitive radio. He has published over 100 refereed journal articles and 260 international conference proceedings papers. He is an author or co-author of eight books, and a member of the organizing committee of several international conferences.

He has received IEEE Pacific Rim Conference on Communications, Computers and Signal Processing, Gold Paper Award, in 2012, WSEAS International Conference on Multimedia Systems and Signal Processing, Best Paper Award, in 2013, and IEEE IFOST, Best Paper Award, in 2014. Also, he is a recipient of Journal of Signal Processing, Best Paper Award, in 2013, 2015, and 2016, and Yahagi Commemorative Award of Journal of Signal Processing, in 2018. He is an IEEE senior member.

INVITED SPEAKER

Formal Invited Speeches - April 17, 2020

Zoom Link: <https://zoom.com.cn/j/381476844>

Zoom ID: 381 476 844



Senior Lecturer Syed Faraz Hasan

Massey University, New Zealand

Paris Local Time (GMT+2): 10:00-10:30

New Zealand Local Time (GMT+13): 21:00-21:30

Speech Title--- Challenges Associated with High-Frequency 5G Deployment

Speech Abstract--- Like many countries around the world, New Zealand will start witnessing the deployment of 5G networks in 2019/2020. While the initial network deployments will be in the 3.5GHz band, the future 5G networks will explore higher transmission frequencies like 26GHz and 38GHz, etc. One of the main problems linked with high-frequency transmissions is a significant reduction in the coverage range, which obviously has considerable implications on the overall network operation. This talk will introduce, motivate the need for and identify the challenges associated with the so-called mm-wave deployment of 5G. This talk will also briefly cover the state of 5G deployment in New Zealand.

BIO: Faraz Hasan is a Senior Lecturer in Communication Engineering and Networks at Massey University, New Zealand, where he leads the Telecommunication and Network Engineering research group.

He obtained PhD degree from Ulster University, UK, in 2011 on Vice Chancellor's Research Scholarship and completed Bachelor's degree in Electrical Engineering from NED University of Engineering and Technology, Pakistan, in 2008, with distinction. He started his post PhD research at Korea Advanced Institute of Science and Technology (KAIST) in the Department of Aerospace Engineering in 2011 and joined Sungkyunkwan University (South Korea) as an Assistant Professor in 2012. He has been with Massey University, New Zealand, since July 2014.

Faraz Hasan has secured contestable funding from Samsung Academic Research Fund (South Korea), New Zealand's Ministry of Business, Innovation and Employment, Department of Internal Affairs, European Commission's travel exchange program, Trans Eurasian Information Network (Asia Pacific) and Internet New Zealand. His work has been covered by international and local media including Reuters, Los Angeles Times, NZ Herald, West TV Perth, Radio New Zealand, etc. He is a Distinguished Speaker of the ACM and a Senior Member of IEEE.

Session 1

Formal Presentation - April 16, 2020

Zoom Link: <https://zoom.com.cn/j/466148731>

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April 16, 2020- Formal Presentation

Session 1

Communication and Information Engineering

🕒 12:30~14:45

Chaired by - Assoc. Prof. Asim Ali Khan

Sant Longowal Institute of Engineering and Ttechnology Longowal, India

9 Presentations—

N1-018, N1-023, N1-008, N1-014, N1-011, N1-024, N2-007, N2-001, N2-011

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<p>N1-018 12:30-12:45</p>	<p>Modified Roll-off Filter with Optimized Impulse Response for Reducing PAPR of Transmitted Signal Yuki Fujiya and Noboru Izuka National Institute of Technology, Suzuka College, Japan</p> <p>Abstract: This paper discusses a modified roll-off filter that yields lower PAPR (peak-to-average power ratio) than that of the conventional roll-off filter. The modified filter has a roll-off function expressed in a sum of sinusoidal functions such as $1 \sin(x)$ and $2 \sin(3x)$. Since a different combination of the coefficients of the sinusoidal functions yields a different impulse response as a candidate while satisfying the Nyquist theorem under the constant bandwidth condition given by the roll off factor, impulse response optimization to reduce a PAPR can be carried out through selecting the response with the lowest PAPR from among the candidates. The modified filter with the roll-off factor of 0.45 yields the same PAPR as that of the conventional filter with the roll-off factor of 0.5. The above result shows that a narrower signal bandwidth under a constant PAPR condition or a lower PAPR under a constant bandwidth condition than the conventional filter can be achieved by the impulse response optimization of the modified filter.</p>
<p>N1-023 12:45-13:00</p>	<p>Cryptographic Randomness Test of the Modified Hashing Function of SHA256to Address Length Extension Attack Dan Michael A. Cortez, Ariel M. Sison and Ruji P. Medina Technological Institute of the Philippines-Quezon City Campus, Philippines</p> <p>Abstract: Length Extension attack is vulnerable to SHA256. It is a type of attack where certain types of hashes are misused as message authentication codes and allowing for inclusion of extra information. In this study, the researchers introduced an improved padding scheme and hashing process for SHA256 to address this problem. To prove that the modified hash function is cryptographically secure, statistical tests using Strict Avalanche Effect, Frequency Test (Monobit), Frequency Test within a Block, and Run Test were performed to evaluate the results of the Message Digest. Test results show that the number of ones and zeros in each element is distributed uniformly random in the final hash value. Additionally, runtime execution is much faster in generating the hash code since it has reduced the number of rounds to 32.</p>
<p>N1-008 13:00-13:15</p>	<p>Data-Aided Color Shift Keying Transmission for LCD-to-Smartphone Optical Camera Communication Links Alberto Pepe, Shivaranjani D. Kumar, Zixian Wei and Hongyan Fu Tsinghua-Berkeley Shenzhen Institute, Tsinghua University, China</p> <p>Abstract: We propose and experimentally validate a data-aided optical camera communication link between commercially available liquid crystals display (LCD)</p>

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	<p>transmitter and smartphone rear camera receiver. The wireless link has been tested on 4, 8 and 16-color shift keying (CSK) modulated signals and paired with an offline artificial neural network-based classification strategy to overcome distortions and disparities in the color representation. For a low luminosity transmitter of 250 cd/m² and a 12-megapixels camera with 60 fps capture rate placed at 50 cm away were reached 1.95 kbps at 100% symbol classification accuracy, 2.93 kbps at 96.4% and 4.86 kbps at 93.8% for 4, 8 and 16-CSK, respectively.</p>
<p>N1-014 13:15-13:30</p>	<p>Discussion on Loopback Interference in Two-Way Full-Duplex Wireless-Powered Relaying Networks with Simultaneous Wireless Information and Power Transfer Min-Kuan Chang, Yu-Feng Lin and Feng-Tsun Chien National Chung Hsing University, Taiwan</p> <p>Abstract: In this work, we discuss the impact of the loopback interference in the two-way full-duplex (TWFD) amplified-and-forward (AF) relaying system with SWIPT. In this investigation, the impact of accumulated loopback self-interference (ALSI) on the performance can be greatly reduced due to the power splitting whereas ALSI has great impact on the two-way full-duplex relaying system without SWIPT [1]. Thus, the power splitting has its additional advantage in such a system.</p>
<p>N1-011 13:30-13:45</p>	<p>Study on A Navigation System for Visually Impaired Persons based on Egocentric Vision using Deep Learning Sho Ooi, Taluya Okita and Mutsuo Sano Ritsumeikan University, Japan</p> <p>Abstract: There are 310 thousand visually impaired persons in Japan. They use usually a white cane or a guide dog while walking. However, the number of guide dogs is less than the required number, and the white cane is difficult to get surrounding information. So, we are developing a navigation system based on egocentric vision instead of walking support tools such as a white cane. The aim of the research is to develop the navigation system with to recognize objects and estimate distances using deep learning. Therefore, to investigate to refer to landmarks object for non-handicapped persons while walking and dangerous objects for the visually impaired person. As a result, the error of the distance system for people was less than 10%, and the error of the distance system of 4-5m was less than 1m. In other words, we think that obstacle detection and distance can be presented to visually impaired people using the method proposed in this study.</p>
<p>N1-024 13:45-14:00</p>	<p>A Fusion Spectrum Sensing Algorithm Using Energy and Eigenvalues He Li, Wenjing Zhao, Minglu Jin and Sang-Jo Yoo Dalian University of Technology, China</p>

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	<p>Abstract: A novel fusion spectrum sensing algorithm using energy and eigenvalues is proposed, which employs the energy, maximum eigenvalue and minimum eigenvalue of the sample covariance matrix to construct test statistic. The proposed algorithm includes the MET, MME and EME algorithms as special cases, and it can be seen as a fusion of the test statistics of the MET and EME algorithms. In addition, the false alarm probability and threshold of the proposed method are derived using random matrix theory. The proposed algorithm is a more general algorithm. Simulation results show the effectiveness of the new algorithm.</p>
<p>N2-007 14:00-14:15</p>	<p>Design of TCP Congestion Control in Data Center Networks Based on Stable Round Trip Time Yi-Cheng Tsai, Ting-Chao Hou and Mao-Ching Chiu National Chung Cheng University, Taiwan</p> <p>Abstract: Data center networks have become increasingly important over the years as they are what make cloud computing, mobile computing, machine learning, and artificial intelligence possible. TCP is the main transport layer protocol in the Internet. Its congestion control has evolved for decades, with many versions or variants having been proposed and improved. Among them, several well-known TCP versions have been implemented either in different versions of the OS kernel or in the data center. Whether it is based on packet loss, round-trip-time (RTT), or bandwidth-delay product (BDP), each has its own advantages and disadvantages. In this paper, we will review the characteristics of the data center, and then propose a TCP version that is more suitable for the data center and achieves reliable transmission with high throughput and low latency.</p>
<p>N1-020 14:15-14:30</p>	<p>Conflict-Free Vectorized In-order In-place Radix-r Belief Propagation Polar Code Decoder Algorithm Arvid B. van den Brink and Marco J.G. Bekooij University of Twente, The Netherlands</p> <p>Abstract: A vectorized belief propagation polar code decoder is desirable because of the potentially high throughput and the ability of in-tegration in processors that perform vectorized processing and access wide memory words. However, current state-of-the-art be-lief propagation polar code decoder algorithms do not perform vector processing and store intermediate results in non consecutive memory locations. Also the current state-of-the-art belief propa-gation polar code decoders require separate memories to store left and right bound intermediate results. In this paper we propose a vectorized in-order in-place belief propagation polar code decoder algorithm where all stages access vectorized data from memory. This results in a high throughput because vectors of elements can be fetched from and stored in memory in each clock cycle. Our algorithm also accommodates for per stage in-place computations which halves the required internal memory.</p>

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	<p>Furthermore, the algorithm has a regular memory addresses access pattern. Conflict free vectorized memory access is achieved by making use of transpose operations on small groups of intermediate results. The use of the transpose operations also results in that both input and output results are placed on subsequent locations in memory.</p>
<p>N2-011 14:30-14:45</p>	<p>Joint Power and Bandwidth Allocation Method Based on Immune Genetic Algorithm for Inter-satellite Links in Beidou Navigation Satellite System Rui Xue, Cheng Zhao and Huaiyu Tang Harbin Engineering University, China</p> <p>Abstract: Constructing the navigation constellation with inter-satellite links has become one of the important development trends for the Beidou navigation satellite system. Power and bandwidth are limited, but precious resources are on-board. How to reasonably distribute the two resources among ISLs to attain high channel capacity while considering both energy and operation efficiencies frequently catches the scholars' attention. Considering the insufficient global optimization ability of the greedy algorithm, which leads to a limited energy efficiency performance improvement, an allocation method based on immune genetic algorithm is proposed. This method uses a selection, crossover, and mutation structure to achieve a global search. It also improves the algorithm's convergence speed through an immune structure and achieves the improvement of the system energy efficiency. Simulation results show that the proposed method has achieved a better energy efficiency than the greedy algorithm in MEO scenarios with large service requirements and in GEO scenarios with a large number of links. The total system power consumption has decreased.</p>

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Zoom Link: <https://zoom.com.cn/j/318898238>

Zoom ID: 318 898 238

(Paris Local Time from 08:30-15:00)

Session 2

Formal Presentation - April 17, 2020

Zoom Link: <https://zoom.com.cn/j/983395835>

Formal Zoom ID: 983 395 835

April 17, 2020- Formal Presentation

Session 2

Computer Science and Information Technology

13:00~15:00

Chaired by - Assoc. Prof. Dan Michael A. Cortez

Technological Institute of the Philippines-Quezon City Campus, Philippines

8 Presentations—

N1-016, N1-002, N2-003, N2-015, N2-008, N1-010, N1-020, N1-005

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<p>N1-016 13:00-13:15</p>	<p>Cryptojacking Classification based on Machine Learning Algorithm Wan Nur Aaisyah Wan Mansor, Azuan Ahmad, Wan Shafiuddin Zainudin, Mohd Nazri Kama and Madihah Mohd Saudi Universiti Teknologi Malaysia, Malaysia</p> <p>Abstract: The rise of cryptocurrency has resulted in a number of concerns. A new threat known as "cryptojacking" has entered the picture where cryptojacking malware is the trend for future cyber criminals, who infect computers, install cryptocurrency miners, and use stolen information from victim databases to set up wallets for illicit funds transfers. Worst by 2020, researchers estimate there will be 30 billion of IoT devices in the world. Majority of the devices are highly vulnerable to simple attacks based on weak passwords and unpatched vulnerabilities and poorly monitored. Thus it is the best projection that IoT become a perfect target for cryptojacking malwares. There are lacks of study that provide in depth analysis on cryptojacking malware especially in the classification model. As IoT devices requires small processing capability, a lightweight model are required for the cryptojacking malware detection algorithm to maintain its accuracy without sacrificing the performance of other process. As a solution, we propose a new lightweight cryptojacking classifier model based on instruction simplification and machine learning technique that can detect the cryptojacking classification algorithm. This research aims to study the features of existing cryptojacking classification algorithm, to enhanced existing algorithm and to evaluate the enhanced algorithm for cryptojacking malware classification. The output of this research will be significant used in detecting cryptojacking malware attacks that benefits multiple industries including cyber security contractors, oil and gas, water, power and energy industries which align with the National Cyber Security Policy (NCSP) which address the risks to the Critical National Information Infrastructure (CNII).</p>
<p>N1-002 13:15-13:30</p>	<p>The Survey of Software Display Technology for General Radar Terminal Zhenkui Miao, Zhang Jialin and Xiangying Kong Jiangsu Automation Research Institute, China</p> <p>Abstract: Based on the whole integrated computing system, processing of radar video data based on network, how to realize the terminal display of general radar has become an important research direction, and the displaying of effect has become a key factor to measure the quality of the equipment. Compared with the three methods which are the windows multimedia's instructions, the developments of DirectX3D and OpenGL language, it uses the GLSL method to achieve the display and the attenuation. It is the best method and the effect is the greatest.</p>

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<p>N2-003 13:30-13:45</p>	<p>MOOCs – An Enquiry of Variables and Effect Sizes Malissa Maria Mahmud, Wong Shiau Foong and Mohd Syuhaidi Abu Bakar Sunway University, Malaysia</p> <p>Abstract: The proliferation of Massive Open Online Courses (MOOCs) is widespread. Debates gyrating the issue have been rather polarizing, with one spectrum presaging it as the forefront of the 21st century education, and another one brushing it off as another hype of a contemporary marketing fad. Nonetheless, the extent of prospect exists in myriad of aspects and pathways, considering the large number of end users and institutions employing MOOCs as an alternative to the existing pedagogic modes. Scalability and open designs in MOOCs create tremendous potential for experimentation with online approach, enabling the expansion and access of higher education to all. Thus, this paper examines the most prevalent dependent variables measured in MOOCs, and the correlation of powerful combined effect sizes with the commissioning of the ascertained MOOCs. Eight samples were included based on their significance and established priori to probe on the in-depth of the treatment effect, in which the magnitude of effect size (ES) for the selected samples were tabulated according to the Cohen's d formula and benchmark (1988; 1992). Majority of the samples tested on the Performance variable (n = 27) as the highest frequency, followed by the Attitude (n = 11), Interaction (n=3) and lastly Satisfaction (n =1), predominantly measured with small effect size. By and large, the combined effect sizes for the eight samples suggest wide-ranging positive repercussions; however, limited to mediating and confounding variables. Thus, further inquiries are requisite to understand the overall functionality.</p>
<p>N2-015 13:45-14:00</p>	<p>An Quick Available-Bandwidth Measurement Method Based on Link Delay Growth Rate Junzheng Shi, Qingya Yang, Gaopeng Gou and Gang Xiong Chinese Academy of Sciences, China</p> <p>Abstract: Available bandwidth(ABW) has become a key indicator of network measurement, in order to measuring measurement accuracy, in particular, the measurement speed with available bandwidth measurement is also very important. This paper proposes a quick available bandwidth method named QuickAbw, which obtains the available bandwidth quickly under the two link delay growth rates. The link delay growth rate is the rate of growth in the interval between probe packets over time when low-intrusion probe packets with equal intervals just cause link congestion. It is worth mentioning that the probe packets stop sending immediately after causing the link node to overflow, so this method has little impact on the link. Simulations show that QuickAbw has higher measurement accuracy and shorter measurement time than other well-known available bandwidth tools for</p>

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	<p>comparison in a network with single bottleneck-link. Finally, we tested in a real environment consistent with the simulation environment settings, and the experimental results were basically consistent with the simulation results.</p>
<p>N2-008 14:00-14:15</p>	<p>Lightweight Super-resolution Learning Model for Extremely Exposed Images Tzu-Hsiu Chen, Chung-Hsun Huang and Yuan-Sun Chu National Chung Cheng University, Taiwan</p> <p>Abstract: Video surveillance system adopting wireless sensor network (WSN) becomes more and more popular. To achieve energy efficiency and low transmitting bandwidth, low-cost and low-resolution video camera may be used. However, captured image/video with low resolution may cause information loss; for example, suspicious objects such as a bomb, and emergent events such as fire emergency. Moreover, it is getting deteriorated in case an extremely exposed scene is presented. In this paper, a light-weight learning-based super-resolution (LLBSR) image re-construction algorithm is proposed for the control center of surveillance system to recover information details from low-resolution images with extremely exposed scenes. The captured video sequences were processed via a simplified difference residual network (DRN) to improve contrast first. Then the pre-processed video sequences were scaled up via a lightweight SR neural network (LSRNN). Experimental results show that the proposed algorithm can achieve a comparable PSNR performance using a simple neural network as compared with a famous prior work with very deep neural network.</p>
<p>N1-010 14:15-14:30</p>	<p>Quasi Analysis of Rainfall Prediction during Floods using Machine Learning Kovvuri N Bhargavi and Jaya Suma Aditya College of Engineering and Technology, India</p> <p>Abstract: Floods are the most common natural disasters and researchers turned their spotlight on prediction of rainfall for rescuing lives of the people before or after its arrival. The intensity of flood majorly relies on heavy rainfall. If the rainfall is predicted well in advance it will be useful for taking precautionary measures. In this paper, predictive analysis is carried out using both classification and regression models. The prediction analysis is evaluated with the feature rain Tomorrow feature in the dataset. The computation analysis shows that prediction using Random Forest classifier and nth Polynomial regression gives exactness for assessment.</p>
<p>N1-005 14:30-14:45</p>	<p>Fatigue Assessment of Bicep Brachii Muscle Using Surface EMG Signals Obtained from Isometric Contraction Tripash Bansal and Asim Ali Khan</p> <p>Abstract: In this study, Surface EMG signals are used to analyze the progression of muscular fatigue with time by estimating the change in myoelectric properties</p>

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	<p>when right bicep brachii muscle is subjected to constant force isometric contraction. Muscular fatigue most frequently occurs due to powerful utilization of a particular group of muscle which can lead to decline in performance or sometimes to injury and can go undetected at early stage. In this proposed method, Discrete Wavelet Transform is used to decompose the EMG signals using Daubechies type 7 wavelet with three level of decomposition. For each detailed and approximate component temporal features like Root Mean Square, and Spectral features like Mean frequency, Median frequency and Energy are evaluated. Results show that mean frequency values perform significantly better in estimating the level of muscular fatigue with time. Furthermore, using Support Vector Machine classifier, the subjects were classified into muscular and non-muscular groups and second level detailed component shows high class separability in feature space.</p>
<p>N2-001 14:45-15:00</p>	<p>Effectiveness of Formative E-assessment Procedure: Learning Calculus In Blended Learning Environment Wong Shiau Foong, Malissa Maria Mahmud and Wong Shiau San Sunway University, Malaysia</p> <p>Abstract: Emergence of new educational technologies is changing the way we learn. Online communication acts as one of the crucial internet applications and assets are widely used in higher education in this millennium era. Due to the pressure to adapt to the digital age, educators are striving to learn and equip themselves with the 21st century teaching strategies in order to augment students' experiences. Numerous literatures have established that teaching and learning in blended learning environment leads to the need for suitable and effective assessment practices to be designed to enhance the learning of the students in order to beget positive impacts. On the other hand, there are researches reveal that teacher-centered approach is more effective and better. Since none of the recent studies described the effectiveness of the formative e-assessment to learn calculus in blended learning environment in an American Degree Program, thus, this study is aimed at examining the effectiveness of the formative e-assessment procedure integrated in a blended learning setting by identifying the students' skills and knowledge acquisition for a Calculus course in American Degree Program in Malaysia. The findings indicate that the skills and knowledge acquired by the students are effectively enhanced and consolidated, with learning achievement of over 80% in e-assessment which reflects that the learning outcomes of the course were well achieved.</p>

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