2016 International Conference on Smart Green Technology in Electrical and Information Systems (ICSGTEIS)

PROGRAM BOOK

Advancing Smart and Green Technology to Build Smart Society

6 - 8 October 2016
Bali, Indonesia

Organized by

Department of Electrical and Computer Engineering
Postgraduate Study in Electrical and Computer Engineering
Udayana University

Technically Co-Sponsored by

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WELCOME MESSAGE

It is my privilege and pleasure to welcome to the beautiful island of Bali all the distinguished participants to the International Conference on Smart-Green Technology in Electrical and Information Systems (ICSGTEIS 2016) which is held on 6 – 8 October 2016, in Sanur, Bali. The ICSGTEIS 2016 is organized by Department of Electrical and Computer Engineering together with Magister of Electrical and Computer Engineering, Udayana University, for international researchers, experts, students to share, exchange ideas, innovation, experience and the latest research in the field of Smart-Green Technologies. The conference is conducted in conjunction with 54th Anniversary of Udayana University and 51st Anniversary of Faculty of Engineering.

The conference includes a wide range of topics, that is not limited to Energy and Power Engineering, Electronic Devices and Systems, Multimedia Telecommunications, and Software Engineering and Information Systems. The conference has received 95 submissions. All submissions then have been reviewed through peer revieweng process. There are 38 selected papers for presentation.

Additionaly, the conference run three programs that are international workshop on 'e-Government toward Smart City Implementation', Udayana University IEEE Student Branch Workshop with topic of 'Internet of Thing for Smart City', International Student Conference conducted by Udayana University IEEE Student Branch, and social events. Totally eight keynote speakers are pleased to present and share their latest reseach in the plenary sessions and in the workshops.

For this good opportunity, I would like to express my great gratitude to all keynote speakers for their kind support to make this conference a great success. I would like to thank the IEEE Indonesia Section for their continuous support. My high appreciation goes to the President of Udayana University and Dean of Engineering Faculty of Udayana University for their encouragement and funding. Many thanks go to Primakara, PT. Telkom, and all technical sponsors for their kind assistance. In addition, I am grateful for great support of all technical program and organizing

committees for their hard work for more than one year. Finally many thanks go to all participants. With all of your supports, the conference could be run now.

I wish you all have a successful conference and pleasant experience of Bali.

Dr. Linawati
ICSGTEIS 2016 General Chair

CONTENTS

TOPICS

Energy and Power Engineering

- High Voltage Engineering
- Electromagnetic Compatibility
- Energy Conversion and Renewable Technologies
- Computer Applications in Power Systems
- Power Electronics and Electric Drives
- Power System Stability and Power Quality
- Smart Grid and Distributed Generation
- Energy Policies and Management
- Power Transmission and Distribution Systems

Electronic Devices and Systems

- Green Material and Electronic Devices
- Biomedical Engineering
- Microelectronics
- Optoelectronics and Laser Applications
- Measurement and Instrumentations
- Intelligent Control Systems
- Mechatronics, Robotics, and Automation

Multimedia Telecommunications

- Multimedia Information Processing
- Vision, Graphics, and Visualization
- Distributed Source Coding
- Computer and Communication Networks
- Electromagnetic and Radio Propagation
- Wireless and Mobile Communications
- Remote Sensing and GIS
- Smart City and Digital Village
- Wireless Sensor Network
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- Network Security and Management
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Software Engineering and Information Systems

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- Computing Algorithms
- Intelligent System Design
- Information Systems and Management
- Mobile, Cloud, Ubiquitous Computing, Quantum Computing
- Human Computer Interaction and User Experience
- Knowledge Discovery in Databases
- Games Theory and Applications
- Soft Computing

ORGANIZING COMMITTEE

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- Linawati

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- Kalvein Rantelobo (Indonesia)
- I Made Ginarsa (Indonesia)

KEYNOTE SPEAKERS

Prof. Manos M Tentzeris
School of Electrical and Computer Engineering
The Georgia Institute of Technology, USA

Professor Tentzeris was born and grew up in Piraeus, Greece. He graduated from Ionidios Model School of Piraeus in 1987 and he received the Diploma degree in Electrical Engineering and Computer Science (Magna Cum Laude) from the National Technical University in Athens, Greece, in 1992 and the M.S. and Ph.D. degrees in Electrical Engineering and Computer Science from the University of Michigan, Ann Arbor in 1993 and 1998.

He is currently a Professor with the School of ECE, Georgia Tech and he has published more than 550 papers in refereed Journals and Conference Proceedings, 4 books and 23 book chapters. He has served as the Head of the Electromagnetics Technical Interest Group of the School of ECE, Georgia Tech. Also, he has served as the Georgia Electronic Design Center, Associate Director for RFID/Sensors research from 2006-2010 and as the GT-Packaging Research Center (NSF-ERC), Associate Director for RF research and the leader of the RF/Wireless Packaging Alliance from 2003-2006. Also, Dr. Tentzeris is the Head of the A.T.H.E.N.A. Research Group (20 students and researchers) and has established academic programs in 3D Printed RF electronics and modules, flexible electronics, origami and morphing electromagnetics, Highly Integrated/Multilayer Packaging for RF and Wireless Applications using ceramic and organic flexible materials, paper-based RFID's and sensors, inkjet-printed electronics, nanostructures for RF, wireless sensors, power scavenging and wireless power transfer, Microwave MEM's, SOP-integrated (UWB, multiband, conformal) antennas and Adaptive Numerical Electromagnetics (FDTD, MultiResolution Algorithms). He was the 1999 Technical Program Co-Chair of the 54th ARFTG Conference and he is currently a member of the technical program committees of IEEE-IMS, IEEE-AP and IEEE-ECTC Symposia. He was the TPC Chair for the IMS 2008 Conference and the Co-Chair of the ACES 2009 Symposium. He was the Chairman for the 2005 IEEE CEM-TD Workshop. He was the Chair of IEEE-CPMT TC16 (RF Subcommittee) and he was

the Chair of IEEE MTT/AP Atlanta Sections for 2003. He is a Fellow of IEEE, a member of MTT-15 Committee, an Associate Member of European Microwave Association (EuMA), a Fellow of the Electromagnetics Academy, and a member of Commission D, URSI and of the the Technical Chamber of Greece. He is the Founder and Chair of the newly formed IEEE MTT-S TC-24 (RFID Technologies). He is one of the IEEE C-RFID Distinguished Lecturers and he has served as one IEEE MTT-Distinguished Microwave Lecturers (DML) from 2010-2012.

Topic:

State of The Art Smart Green Technologies

Abstract:

Inkjet-/3D-/4D- Printed Paper/Polymer-Based "Green" mmW Modules: The Final Step to Bridge Cognitive Intelligence, Nanotechnology and RF for IoT and 5G Applications

In this talk, inkjet-/3D-printed flexible antennas, RF electronics and sensors fabricated on paper and other polymer (e.g.LCP) substrates are introduced as a system-level solution for ultra-low-cost mass production of Millimeter-Wave Modules for Communication, Energy Harvesting and Sensing applications. Prof. Tentzeris will briefly touch up the state-of-the-art area of fully-integrated wireless sensor modules on paper or flexible LCP and show the first ever 2D sensor integration with an RFID tag module on paper, as well as numerous 3D and 4D multilayer paper-based and LCP-based RF/microwave structures, that could potentially set the foundation for the truly convergent wireless sensor ad-hoc networks of the future with enhanced cognitive intelligence and "rugged" packaging. Prof. Tentzeris will discuss issues concerning the power sources of "near-perpetual" RF modules, including flexible miniaturized batteries as well as power-scavenging approaches involving thermal, EM, vibration and solar energy forms. The final step of the presentation will involve examples from mmW wearable (e.g. biomonitoring) antennas and RF modules, as well as the first examples of the integration of inkjet-printed nanotechnology-based (e.g.CNT) sensors on paper and organic substrates for Internet of Things (IoT), 5G and autonomous vehicles applications. It has to be noted that the talk will review and present challenges for inkjet-printed organic active and nonlinear devices as well as future directions in the area of environmentally-friendly ("green") RF electronics and "smart-skin' conformal sensors.

Prof. Daniel Churchill
The University of Hong Kong, Hong Kong

Academic qualifications: PhD, Mlaw, MSc, BSc, BA
Previous academic positions held (with dates) :
- Lecturer (Learning Science and Technology) — from 2001 to 2004, Learning Sciences and Technology Academic Group, National Institute of Education, Nanyang Technological University, Singapore
- Instructional Design Specialist (E-learning) — from 1999 to 2001, Educational Technology Division, Institute of Technical Education, Singapore
- Lecturer (Multimedia Software Engineering) — from 1997 to 1999, Japan-Singapore Institute of Software Technology (JSIST), Singapore Polytechnic, Singapore
- Lecturer (Instructional Multimedia)/Course Coordinator — from 1994 to 1997, West Coast College of Technical and Further Education (TAFE), Western Australia
- Secondary School Teacher (Mathematics, Computing and Science) — from 1991 to 1993, Ministry of Education, Western Australia

Present academic position :
Associate Professor, faculty of Education, The University of Hong Kong (Since 2004)

Publication records :
- Churchill, D., Lu, J., Chiu, T., & Fox, B. (In press). Mobile learning design theories and application. Springer.
- Chiu, K. F. T., & Churchill, D. (2015). Exploring the characteristics of an optimal design of digital materials for concept learning in mathematics: Multimedia learning and variation theory. Computers & Education, 82 (2), 280–291.

- Churchill, D. (2014). Presentation design for "conceptual model" learning objects, British Journal of Education Technology, 45(1), 136-148
- Churchill, D., & Wang, T. (2014). Teacher's use of iPads in higher education. Educational Media International, 51(3), 214-225.
- Churchill, D. (2013). Conceptual model design and learning uses. Interactive Learning Environments, 21(1), 54-67.
- Churchill, D. (2011). Web 2.0 in education: a study of the explorative use of blogs with a postgraduate class. Innovations in Education & Teaching International, 48(2), 149-158.
- Churchill, D. (2011). Conceptual Model Learning Objects and Design Recommendations for Small Screens. Educational Technology & Society, 14 (1), 203–216.
- Churchill, D. (2009). Educational applications of Web 2.0: using blogs to support teaching and learning. British Journal of Educational Technology, 40(1), 179-183.
- Churchill, D., & Hedberg, G. (2008). Learning object design considerations for small-screen handheld devices. Computers & Education, 50(3), 881-893.
- Churchill, D., & Churchill, N. (2008). Educational affordances of PDAs: a study of a teacher's exploration of this technology. Computers & Education, 50(4), 1439-1450

Others (Award) :
1. Outstanding Teacher Award 2011 (awarded by the University of Hong Kong)
2. Distinguished Teacher Award 2008 (awarded by the Faculty of Education, The University of Hong Kong)
3. Best Multimedia on the Web (Awarded by Macromedia)

Topic:

Learning Design and Digital Resources for STEM Education

Abstract:

STEM (curriculum integration of Science, Technology, Engineering and Mathematics) is being strongly recognized as critical for development of contemporary societies in the atmosphere of increasing economic, scientific and technological globalization. STEM related reforms emphasize that the teaching practices must (a) focus across the curriculum of the STEM disciplines, (b) be inquiry-, problem- and activity-based, and (c) incorporate digital literacies. In this

paper we explore learning design framework and suitable digital resources for development of concept knowledge in STEM education. Further attention in this paper is given to an appropriate curriculum design that can serve needs and requirements of STEM education. Such curriculum must clearly emphasize importance of concept learning in STEM, in addition to that, promote knowledge uses and development of digital literacies.

Prof. Ken Umeno
Kyoto University, Japan

Professor at Graduate School of Informatics, Kyoto University, Japan. He was born in Nagoya, Japan just two years after the Japanese bullet train (Tokaido Shinkansen) began to operate between Osaka and Tokyo. He received his BSc degree in electronic communication from Waseda University, Japan, in 1990.

He received his MSc and PhD degrees in physics from the University of Tokyo, Japan, in 1992 and 1995, respectively. From 1998 until he joined Kyoto University as Professor in 2012, he worked for Japan's Ministry of Posts and Telecommunications in its Communications Research Laboratory (currently National Institute of Information and Communications Technology, Japan). From 2004 to 2012, he was CEO and President of ChaosWare, Inc. From April of 2016, he is Visiting Professor at the Institute of Solid State Physics, the University of Tokyo, Japan. He received the LSI IP Award in 2003 and the Telecom-System Awards in 2003 and 2008 for his inventions on chaotic communications technology. He has dedicated to chaotic nature to make superefficient ICT and computing technology for more than 25 years.

Topic:

Green Chaos Technology for 5G, IoT and Cyber Security

WORKSHOP ON E-GOVERNMENT TOWARD SMART CITY IMPLEMENTATION

Prof. Jeffrey Soar
The University of Southern Queensland, Australia

Professor Jeffrey Soar holds the Chair in Human-Centred Technology at the University of Southern Queensland where he researches technology innovation for human benefit. He came into research from a career at the highest levels of ICT management within large public and private organisations. He was CIO in several government departments in Australia and New Zealand including Director of Information and Technology for NZ Police where he managed the largest-ever ICT project impacting across emergency services. In academia he established two demonstration smart homes with the latest in innovations for independent living, entertainment, security and energy. His research has been supported by 7 Australian Research Council grants as well as over 30 grants from national and international technology and service organisations. His current research projects are in Technology for Economic Development, E-Learning and M-Learning, E-Government, E-Health, Decision Support, Mobile, Cloud, Algorithms, Adoption and Benefits Realisation, Human Computer Interaction and User Experience.

Title:

Smart City: Government Cloud Strategy

This workshop will discuss e-Government and Smart City technologies and will report on recent related research projects involving related case studies.

Case Study 1: Smart Ambient technologies (SAT) for dementia and aged-care

A convenience sample of 39 clients of Alzheimer's Queensland participated out of 60 who were invited. Participants were prescribed individual items of SAT, based on an Occupational Therapist assessment of individual need and functional capacity, in order to assess the value as perceived client and their carers. The carers completed

a survey before and after a trial of the SAT, and participated in an interview and/or focus group after the trial. The Occupational Therapists were also interviewed to gain their feedback on the strengths, weaknesses and general applicability of the SAT for this group.

Case Study 2: A national review of SAT/Telehealth projects

Thirty project leaders of Australian SAT/Telehealth projects participated in individual or small group interviews; the purpose was to understand their experiences, outcomes and learnings from the projects.

Results: the SAT/Telehealth projects were found to have delivered results that were consistent with the literature in terms of user satisfaction and, where appropriate, benefits such as better managed care. The national review identified factors for success of AT as 1. A market focus. 2. Expert 'champions' 3. Long-term business models 4. Recognition of New interdisciplinary players, coordination, incentives and support.

Case Study 3: Intentions to adopt Cloud computing in municipal government

Local government is increasingly using cloud computing to deliver services and meet the needs of their residents. Surrounding the use of cloud computing are many challenges and issues that can have major impacts on the adoption of this technology and the information and services supported by this technology. This research aims to study the challenges and issues that influence the cloud computing adoption in Australian municipal governments. This research employed survey data from 480 IT staff across 47 regional municipal governments.

Case study 4: mood sensing utilising the recording features of Smart Phones

This project used the features of Smart Phones to capture mood along with other information. The modalities included face/mood analysis using a classification system, geolocation, movement from the accelerometer and voice analysis. The software was trialled in youth mental health. This technology has potential for security in airports and other places, police negotiators, emergency call takers and others.

References:

ACOLA (2014) Assistive Health Technologies for Independent Living: a report prepared by ATSE on behalf of ACOLA. Australian Council of Learned Academies, Melbourne, Australia.

Ali, O., Soar, J., Yong, J., McClymont, H. and Angus, D. 2015, 'Collaborative cloud computing adoption in Australian regional municipal government: An exploratory study', The 19th IEEE International Conference on Computer Supported Cooperative Work in Design, Calabria, Italy, pp. 540-548.

Ali, O., Soar, J. and Yong, J. 2016, 'An investigation of the challenges and issues influencing the adoption of cloud computing in Australian regional municipal governments', Journal of Information Security and Applications, vol. 27/28, pp. 19-34.

Rana R, Hume M, Reilly J, Jurdak, R and Soar J. (2016) Opportunistic and context-aware affect sensing on smartphones: the concept, challenges and opportunities. IEEE Pervasive Computing, April-June. pp. 60-69. ISSN 1536-1268

Soar, J., Capamagian, L., Denaro, C, Prentice, L and Skinner-Smith R (2015) Research Note: Small pilot of home telehealth in a hospital heart failure outreach service. EJournal of Health Informatics, Vol 9, No 1 Special Issue on informatics in Aged-Care

Yuginovich, T. and Soar, J. (2014) Lean thinking in dementia care through smart assistive technology: an evaluation. In: Wickramasinghe, N., Al-Hakim, L. and Gonzalez, C. and Tan, J. Lean thinking for healthcare. Healthcare Delivery in the Information Age. Springer, New York, NY. United States, pp. 143-167. ISBN 978-1-4614-8035-8

Hong Sin K
CEO, Chairman and Founder of PhoenixICT, Asean CIO Association, Singapore

As CEO, Chairman and Founder of PHOENIXICT Group of companies (Singapore & Thailand), Hong Sin has spent her entire career serving clients, working on business development, introducing cutting edge technology to resolve issues from various business angle. Phoenixict was established with intent in recognizing the great skill and expertise of the crowd to bridge businesses effectively and efficiently through genuine relationship and connections. Creating the vision "nurture talent, innovate culture and bridge people/business to world class hub". Leveraging on crowd wisdom, we support the market idea through crowdfunding and crowdsourcing.

In passion of driving global crowdfunding, she took lead to create the 1st Crowdfunding Asia Summit to raise bar of awareness. Branded in Singapore, she enrolled the support of the international practitioners to join force to promote Crowdfunding as industry to sync with international development. She is committed to support Asia potential and innovation leveraging on crowdfunding as strong alternatives funding for startup, innovators and entrepreneurs; creatively even existing business expansion worthiness. Successfully scheduled for 2015 was a full year packed with summits due to demand adoption. Workshops were develop and customized to serve different needs. Her continuous effort in SMART agora extends the outreach beyond just funding but also sourcing. It also marks milestone as she continues developing her work but pivot to look at countries needs, challenges, demands and change. Understanding funding has always been a consideration for development; she starts her projects with identifying what best fit and serves the startups, SMEs, enterprises and government as she believes that "funding should not be a show stopper" with the use of alternative finance for genuine projects.

Her 2016 projects entails working on Europe-Asia opportunities in areas like SmartCities and Digitization to empower people and driving the plan towards realisation in various cities. Exchange programmes and drawing the "Pioneers expertise" and matching the "Young dynamite" is under creation now.

Hong Sin has worked with Asean government and enterprises to address major ICT, cyber-security and forensic. She also held the role to drive initiatives with top CIOs as International Liaison Officer for CIO16 Association of Thailand as well to support Thailand to develop the new ASEAN CIO Association. Currently holding the role of Advisor to Asean CIO Association, she engages all 10 countries decision maker to drive Asean Digital Economy through the development of key thrust and vision towards SMART Asean.

Her skill set were all acquired through her experience working in various industries successes. Her commitment to develop strong network was all showcase over the years through conferences, events and activities. Bridging relationship, entrepreneurial leadership and continuous business engagement are strength of hers.

A proven track record since 2001 in driving a regional distribution house for cybersecurity and forensic. She has developed a distribution channel of 700 resellers and more than 10,000 enterprises across ASEAN. Today, she is looked upon as pioneer in the industry for cutting edge technology development and drawing the world best resources to where the needs required.

With her passion and energy, she is highly sort after for business collaborations and idea manifestations. She has been instrumental to set standards through working with technology providers in many vertical fields. She is a firm believer of good business practices by means of building TRUST, INTEGRITY & ETHICs.

Presentation Title:

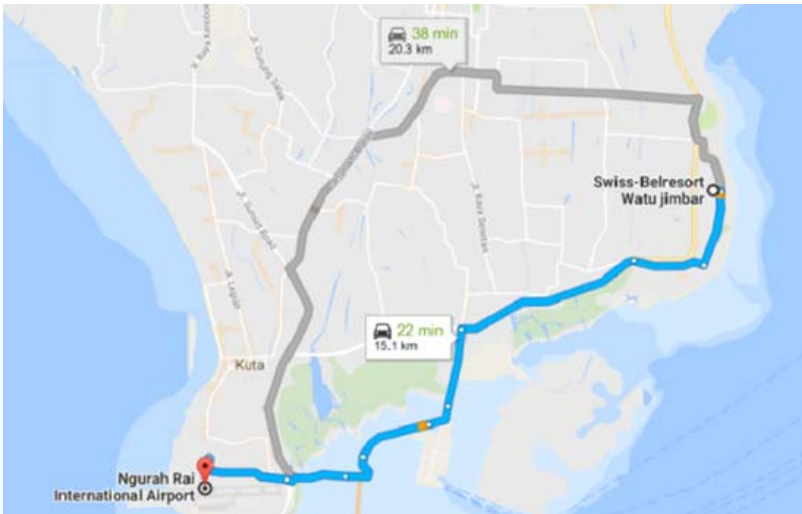## Empowering Croud Sourcing and Open Data to foster Smart Cities

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Group ID:
ICSGTEIS – 2016 organized by Electrical and Computer Engineering Department of
Udayana University

HOW TO GET TO THE CONFERENCE LOCATION

The most convenient way to get to the conference venue (Swiss-Belresort Watu Jimbar) from the airport is by taxi. Taxi stand is available at the arrival area both for domestic and international terminals. It takes approximately 20 - 25 minutes from the airport to the venue, and at a cost of about IDR 100,000 - IDR 150,000. Please note that the indicated fare is for guidance only and may be changed from time to time.

Although most of the taxi drivers in Bali understand English well, sometimes you may find a difficulty to communicate with them. In that case, it may be useful to show the following note to the taxi driver.

> **Tolong antar saya ke alamat ini:**
>
> **Swiss-Belresort Watu Jimbar**
> **Jl. Danau Tamblingan 99A, Sanur**

In English:

Please take me to the following address:

Swiss-Belresort Watu Jimbar
Jl. Danau Tamblingan 99A, Sanur

PROGRAM AT GLANCE

Thursday, 6 October 2016

Time	Program	Room
08:00 – 17:00	Registration	
09:00 – 09:30	Opening	Jimbar Ball Room
09:30 – 10:30	Plenary Session (Prof. Manos M Tentzeris)	Jimbar Ball Room
10:30 – 10:45	Coffee Break	
10:45 – 12:00	Plenary Session (Prof. Daniel Churchill)	Jimbar Ball Room
12:00 – 13:00	Lunch	Pool Deck

Thursday, 6 October 2016

Time	Program	Room	Program	Room
13:00 – 14:30	Technical Session 1	Jimbar Room 1	Technical Session 2	Jimbar Room 2
14:30 – 15:00	Coffee Break			
15:00 – 16:30	Technical Session 3	Jimbar Room 1	Technical Session 4	Jimbar Room 2
19:00 – 21:00	Conference Dinner			Pool Deck

Friday, 7 October 2016

Time	Program	Room	Program	Room
08:00 – 11:00	Registration			
09:00 – 10:00	Plenary Session (Prof. Ken Umeno)			Jimbar Ball Room
10:00 – 10:15	Coffee Break			
10:15 – 11:45	Technical Session 5	Jimbar 1	Workshop (Prof. Jeffrey Soar)	Zanoor 1
11:45 – 13:00	Lunch			
13:00 – 14:30	Technical Session 6	Jimbar 1	Workshop (Hong Sin K)	Zanoor 1
14:30 – 15:00	Coffee Break			
15:00 – 16:30	Technical Session 7	Jimbar 1	Workshop Telkom	Zanoor 1
17:00	Closing			

Saturday, 8 October 2016

Time	Program	Room
08:00 – 9:00	Registration	
09:00 – 10:00	IEEE SB Workshop Session 1	Jimbar 1
10:00 – 10:30	Coffee Break	
10:30 – 12:00	IEEE SB Workshop Session 2	Jimbar 1
12:00 – 13:00	Lunch	
13:00 – 14:30	IEEE Student Branch Paper Contest	Jimbar 1
14:30 – 15:00	Coffee Break	
15:00 – 16:30	IEEE Student Branch Paper Contest	Jimbar 1

TECHNICAL SESSIONS

Technical Session 1 *Energy and Power Engineering 1* Thursday, 6 October 2016; 13:00-14:30 Session Chair: I N. S. Kumara	Jimbar Room 1

1. ID 1179   **Frequency Response and Vibration Analysis in Transformer Winding Turn-to-Turn Fault Recognition**
   M. Bagheri, B. T. Phung
   Department of Electrical and Electronic Engineering, School of Engineering, Nazarbayev University, Kazakhstan
   School of Electrical Engineering and Telecommunications, The University of New South Wales, Australia

2. ID 1222   **Modeling and Control of Permanent Magnet Synchronous Generator Variable Speed Wind turbine**
   Ratna Ika Putri, M. Rifa'i, Lie Jasa, Ardyono Priyadi, Margo P, Mauridhi Hery P
   Electrical Engineering Department, Malang State Polytechnic, Malang, Indonesia
   Electrical Engineering Department, Institut Teknologi Sepuluh Nopember, Surabaya, Indonesia
   Electrical Engineering Department, Udayana University, Bali, Indonesia

3. ID 1180   **Penetration Maximisation of Residential Rooftop Photovoltaic using Demand Response**
   Md Moktadir Rahman, Ali Arefi, GM Shafiullah, Sujeewa Hettiwatte
   School of Engineering and Information Technology, Murdoch University, Perth, Australia
   School of Engineering, National School of Business Management, Colombo, Sri Lanka

4. ID 1214   **Voltage Harmonic Effect on Losses in Distribution Transformers**
   Thinh Dao, H. Abdull Halim, Z. Liu and B.T. Phung
   School of Electrical Engineering and Telecommunications, University of New South Wales, Sydney, Australia

5. ID 1230   **Phase Arrangement for 500kV Quadruple Circuit Transmission Line in Indonesia**
   Aristo Adi Kusuma, Putu Agus Aditya Pramana, Buyung S. Munir

Transmission and Distribution Department, PLN Research Institute, Jakarta, Indonesia

6.   ID 1215   **Transformer Inrush Transients Using Jiles-Atherton Model in PSCAD/EMTDC**
H. Abdull Halim, Thinh Dao, B.T. Phung, and J.E. Fletcher
School of Electrical Engineering and Telecommunications, The University of New South Wales, Australia
School of Electrical Systems Engineering, Universiti Malaysia Perlis (UniMAP), Malaysia

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Technical Session 2
Multimedia Telecommunication 1
Thursday, 6 October 2016; 13:00-14:30
Session Chair: N. M. A. E. Dewi Wirastuti
         Jimbar Room 2

1.   ID 1169   **Spatial Multiplexing using Walsh-Hadamard Transform**
Man Hee Lee, Muhammad Basit Shahab, Md Fazlul Kader and Soo Young Shin
IT Convergence Engineering, Kumoh National Institute of Technology Gumi, Korea

2.   ID 1227   **Performance evaluation of wideband radio communication systems using almost periodic frequency arrangement**
Isao Nakazawa, Ken Umeno
Graduate School of Informatics, Kyoto University, Sakyo-ku, Kyoto, 606-8501 Japan

3.   ID 1196   **Swapped Huffman Tree coding Application for Low-Power Wide-Area Network (LPWAN)**
Jang Yun Seong, Muhammad Rehan Usman, Muhammad Arslan Usman and Soo Young Shin
Department of IT Convergence, Kumoh National Institute of Technology (KIT), Gumi, 39177, South Korea

4.   ID 1130   **Performance Comparison of DFT and DWPT based OFDM system using 64 DAPSK**
Arsla Khan, Muhammad Rehan Usman, Muhammad Basit Shahab, Hye Yeong Lee, Ummi Khaira Latif and Soo Young Shin
WENS Lab, Department of ICT Convergence, Kumoh National Institute of Technology, Gumi, South Korea

5.   ID 1202   **New Expression of SNR Formula for CDMA System**
Hirofumi Tsuda, Ken Umeno

Department of Applied Mathematics and Physics, Graduate School of Informatics, Kyoto University, Kyoto, Japan

6. ID 1193 **An Approach for Selecting Optimum Number of Base Stations using Harmony Search**
I Made Oka Widyantara, I Kadek Susila Satwika, I Made Oka Widyantara, Nyoman Pramaita
Electrical and Computer Engineering Department, Udayana University, Denpasar-Bali, Indonesia

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Technical Session 3
Software Engineering and Information Systems 1
Thursday, 6 October 2016; 15:00-16:30
Session Chair: Made Sudarma

Jimbar Room 1

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1. ID 1197 **From Smart to Smarter Cities: Bridging the Dimensions of Technology and Urban Planning**
Selin Akaraci, Muhammad Arslan Usman, Muhammad Rehan Usman, and Dong Joon Ahn
Department of Architecture Engineering, Department of IT Convergence, Kumoh National Institute of Technology, Gumi, Republic of Korea

2. ID 1210 **OLAP Applications as Knowledge Management Tools on E-Health**
Ida Bagus Gede Dwidasmara, Kadek Cahya Dewi, I Putu Agustina
Computer Science Department, Udayana University, Bali, Indonesia
International Business Management, Bali State Polytechnic, Bali, Indonesia

3. ID 1225 **Environmental Monitoring as an IoT Application in Building Smart Campus of Universitas Udayana**
Nyoman Putra Sastra, Dewa Made Wiharta
Electrical and Computer Engineering Department, Udayana University, Bali, Indonesia

4. ID 1232 **Proposed Model For E-Exam Availability In WLAN Environment**
Gede Sukadarmika, Rukmi Sari Hartati, Linawati, Nyoman Putra Sastra, Dewa Made Wiharta, Made Agus Setiawan
Electrical and Computer Engineering Department, Udayana University, Bali, Indonesia

Department of Computer Science, Udayana University, Bali, Indonesia

5. ID 1239 **Integration Of E-Government Blue Prints Through GIS-Building Data Collection Implementation In Badung Regency**
Jatmiko Wahyu Nugroho Joshua, I Putu Agus Swastika, Komang Wahyu Trisna
STMIK Primakara, Bali, Indonesia

6. ID 1237 **Adaptive Online Learning Design Using Moodle**
Linawati, N.M.A.E.D. Wirastuti, Gede Sukadarmika, I Made Arsa Suyadnya, Duman Care Khrisne
Electrical and Computer Engineering Department, Udayana University, Bali, Indonesia

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Technical Session 4
Multimedia Telecommunication 2
Thursday, 6 October 2016; 15:00-16:30
Session Chair: Oka Widyantara / Oka Saputra

Jimbar Room 2

1. ID 1171 **On the Performance of Perfect and Imperfect SIC in Downlink Non Orthogonal Multiple Access (NOMA)**
Muhammad Rehan Usman, Arsla Khan, Muhammad Arslan Usman, Yun Seong Jang and Soo Young Shin
Department of IT Convergence, Kumoh National Institute of Technology (KIT), Gumi, 39177, South Korea

2. ID 1173 **Simulink Implementation of Non-orthogonal Multiple Access over AWGN and Rayleigh Fading Channels**
Muhammad Basit Shahab, Md Fazlul Kader, Man Hee Lee, Soo Young Shin
Wireless and Emerging Network System (WENS) Lab, Kumoh National Institute of Technology, Gumi, South Korea

3. ID 1217 **Network Performance Framework Analysis Multi Protocol Label Switching (MPLS) in Wireless Network**
Candra Ahmadi, Joko Lianto Buliali, Achmad Affandi
Information System, STMIK STIKOM Bali, Bali, Indonesia
Computer System Department, Institut Tenologi Sepuluh Nopember, Surabaya, Indonesia

4. ID 1218 **Study on Emergency Message Communication System for Ensuring Safety in Antarctica under Extremely Severe Environments**

Kiyoshi Igarashi, Ken Umeno, Masaki Okada, and Masayuki Kikuchi
Applied Mathematics and Physics Department, Graduate School of Informatics, Kyoto University, Kyoto, 606-8501, Japan
National Institute of Polar Research, Research Organization of Information and Systems Tachikawa, Tokyo, 190-8518, Japan

5.   ID 1229   **Performance Comparison of MC-SS MIMO and OFDM MIMO Systems on Selective Fading Channel**
N.P.E.A. Yuniari, N.M.A.E.D. Wirastuti, I G.A.K.D.D. Hartawan
Electrical and Computer Engineering Department, Udayana University, Bali, Indonesia

6.   ID 1195   **On the Proposal of Novel Transmit Scheme with Impedance Switching**
Hye Yeong Lee, Arsla Khan, Soo Young Shin
Department of IT Convergence Engineering, Kumoh National Institute of Technology, Gumi, Korea

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Technical Session 5
Energy and Power Engineering 2
Friday, 7 October 2016; 10:15-11:45   Jimbar Room 1
Session Chair: I .A. Dwi Giriantari / Wayan Gede Ariastina

1.   ID 1242   **Lesson Learned from Badak LNG Process Plant Trip Due to Sea Cooling Water System Failure**
Iqbal Nusya Perdana
Electrical Section, Maintenance Department, Badak LNG, Bontang, Kalimantan, Indonesia

2.   ID 1113   **New Design Banki's Water Turbine Model for Pico Hydro in Tabanan Bali**
Lie Jasa, Putu Ardana
Electrical Engineering Department, Udayana University, Bali, Indonesia

3.   ID 1228   **Design of a GPS-Based Solar Tracker System for a Vertical Solar Still**
Dian Artanto, A. Prasetyadi, Doddy Purwadianta, Rusdi Sambada
Mechatronic Polytechnic, Sanata Dharma Yogyakarta, Indonesia
Mechanical Engineering Department, Sanata Dharma University, Yogyakarta, Indonesia

4. ID 1172 **Evaluation of Transmission Line Parameter for Non Horizontal Earth Contour**
    Putu Agus Aditya Pramana, Aristo Adi Kusuma, Buyung Sofiarto Munir
    Transmission and Distribution Department, PLN Research Institute, Jakarta, Indonesia
5. ID 1199 **DC/AC Power Converter for Home Scale Electricity Systems Powered by Renewable Energy**
    Faizal Arya Samman, Arie Azhari
    Electrical Engineering Department, University of Hasanuddin at Makassar, Indonesia

Technical Session 6 Joint Track 1 Friday, 7 October 2016; 13:00 – 14:30 Session Chair: Yoga Divayana	Jimbar Room 1

1. ID 1200 **Architecture, On-Chip Network and Programming Interface Concept for Multiprocessor System-on-Chip**
    Faizal Arya Samman, Bj̈orn Dollak, Jonatan Antoni, Thomas Hollstein
    Department of Electrical Engineering, University of Hasanuddin at Makassar, Indonesia
    Fachbereich Elektrotechnik und Informations technik, TU Darmstadt, Germany
    University of Applied Sciences, Frankfurt, Germany
2. ID 1039 **Context Modeling for Intelligent Building Energy Aware**
    Gusti Agung A. Putri, Lukito Edi Nugroho, Widyawan
    Department of Electrical and Information Technology, Universitas Gadjah Mada Yogyakarta, Indonesia
3. ID 1211 **Prototype of Fire Detection System in Wireless Transmission Environment**
    Made Dita Rahayu Putri, Linawati, I Made Oka Widyantara
    Electrical and Computer Engineering Department, Udayana University, Bali, Indonesia
4. ID 1238 **Selection of Mother Wavelet for Medical Image Compression**
    I Made Oka Widyantara, I Gusti Ayu Garnita Darma Putri, Nyoman Putra Sastra, N.M.A.E.D Wirastusti
    Electrical and Computer Engineering Department, Udayana

University, Bali, Indonesia

5. ID 1241 **Smart Microgrid System with Hybrid System Supply: Udayana University Pilot Project Design**
IAD. Giriantari, Rina Irawati
Departement of Electrical and Computer Engineering
Udayana University, Bali, Indonesia
R&D Center for Electricity, New, Renewable Energy and Energy
Conservation Technology, MEMR Republic of Indonesia, Jakarta

Technical Session 7 **Joint Track 2** **Friday, 7 October 2016; 15:00 – 16:00** **Session Chair: Lie Jasa**	**Jimbar Room 1**

1. ID 1236 **Characterization of Titanium Dioxide (TiO2) thin films as materials for Dye Sensitized Solar Cell (DSSC)**
I Nyoman Setiawan, Ida Ayu Dwi Giriantari, W.Gede Ariastina, IB Alit Swamardika, and Agus Selamet Duniaji
Departement of Electrical and Computer Engineering,
Department of Food Science and Technology
Udayana University, Bali, Indonesia

2. ID 1177 **Opinion Mining System with Pos Tagging and SVM Method for Data Extraction Services Public Opinion on Bali Mandara Health Insurance**
Luh Ria Atmarani, I.A. Dwi Giriantari, Made Sudarma
Electrical and Computer Engineering Postgraduate Program,
Udayana University, Bali, Indonesia

3. ID 1204 **Design and Balancing Load Current in 3 – Phase System using Microcontroller ATMEGA 2560**
C.G.I. Partha, IGAP Raka Agung, IM Arsa Suyadnya
Electrical and Computer Engineering Department, Udayana University, Bali, Indonesia

4. ID 1192 **Evaluation of NAS Infrastructure at Centralized Network Architecture**
Made Sudarma, Dandy Pramana Hostiadi
Electrical and Computer Engineering Department, Udayana University, Bali, Indonesia
Department of Computer System, STMIK STIKOM Bali, Indonesia

PRESENTATION

Presentation Arrangement

- The formal language of the conference is English.
- All accepted and registered papers will be presented in oral presentation.
- Each presentation is allocated for 15 minutes. Presenters are required to contact session chair before session commences.
- For presentation purpose, a projector screen, LCD projector and a notebook computer with standard software are provided. To avoid possible software incompatibility, it is recommended to bring your own computer.

Name Tag

Participants are obliged to always wear the provided name badge during the conference.

Mobile Phone

The use of mobile phone in the conference room is restricted. Please switch off your mobile phone or put it in silent mode.

ABOUT BALI

Geography

Amongst the thousands of islands that are beautifully arranged from west to east in Indonesia, Bali is peacefully seated in the eastern part of the tropical country. Occupying an area of 5.632 kilometer, Balis beauty sparks out as a dramatic view but overshadowed with the arrogance of the active volcanoes.

The Balis mountainous area divides the island into northern and southern parts. Its exoticism lies on the beautiful silhouette of its white-sand beach-es. Outside the main island, Bali promotes some of tiny islands on, they are Nusa Penida, Nusa Lembongan, Ceningan & Menjangan -Island that are undeniably paradises for divers and surfers.

Balinese puts high respect for the natural elements, including mountains, sea, springs, like lakes, rivers and other elements. They get acquainted with their physical existence while upholding a philosophy of being the sources for life. Hence, the nature and all the important elements have special space in the hearts of Balinese. The Balinese include them as important constituents in its spiritual and religious activities, exceptionally for Mount Agung, the highest mountain in Bali

(3,141 meter) and Besakih Temple (the mother temple) of Balinese Hindus on its feet.

Traditions and Religions

Bali is densely populate & with over 3.5 million people, almost all of the Balinese Hindu Religion. The Hindu people retain the basic values that teach them of balance and harmony of all aspects in life, which is Tri Hita Karana.

Tri Hita Karana is a guidance on how to have a harmonious relationship with surrounding nature (Pawongan), others people (Pelemahan) and with Ida Hyang Widhi Wasa/God The Almighty (Parahyangan). The commitment to maintain and manifest the fundamental values into daily living is the thing that keeps Bali unique in life dynamic.

Balinese Hindus celebrates Galungan day and Kuningan day once in every six month and celebrate the New Year with special rituals called NYEPI. The Nyepi celebration is started with the conduct of catur Brata Penyepian (four forbidden things to do during the change of Saka Year) which includes amati geni (no light), amati lelunggaan (no trip), amati lelangguan (no entertainment) and amati karya (no activity). During Nyepi, all places in Bali for 24 hours will be left in silent and free from activities, including those in airport, harbours, terminals, and roads.

Synergy of Culture, Nature and Spiritual

Bali gives high values to nature, culture and spiritual life, which are all in synergy to create harmony and peace in the island.

Balis charm is not only anchored in the beautifully crafted paddy terrace which is watered by Subak system (a system that has been implemented for many years). The island captures the heart of tourists through a selection of dance and cultural ritual festivities also in spiritual awareness that make strong foundation to live their life. Besides, the honesty of the Balinese attains great respect from the other people.

Nature

Bali is gifted with rich nature. Not mention the fertile soil, abundant water resources, or friendly but cool weather, Balis land lets grow any plants. From rice produced at stunning paddy terrace to any plants and range of colourful flowers made for rituals, such as ba-nyan tree, coconut, plumeria, lotus, hibiscus, cempaka and other plants, its own characteristics Bali defines.

For Balinese, nature and plants are highly respected elements. In fact, they have special event to give deep salute to the plants, which is Tumpek Uduh. So many rituals you will meet in Bali are mostly to bring harmony into life, either on the sea or springs, forests, and other places.

Culture

A bounce of cultural attractions and creations from Bali have been put on stage everywhere in the world. People admire every move on Balinese dances, spirit behind the gamelan, the story of the puppet show, beautiful crafts, brilliant paintings, clothes, and other art and cultural designs.

Beyond the creativity, the deep understanding to the tradition and decency to present a masterpiece of art to the Great Creator, Ida Hyang Widhi Waca, also plays important role in cultural creations and attractions.

Spiritual

Spiritual activities in Bali are most dominated by Hindu rituals. Everyday in life in the island of thousands of temples, a spiritual activity takes place, especially on sacred days for Hindu people.

A spiritual event also takes place to mark each phase of life from the day of the birth, into childhood, adulthood, wedding ceremony until they are departed. One ritual process for the departed, called Ngaben, is in fact famous amongst the international community.

Attractions – The Colour of Celebration

Do not worry that you will miss interesting things in Bali. There are more to see than its amazing nature and culture, such as how Balinese live their daily life. There is always a spiritual presentation in efforts to keep the nature and the Gods creatures all in balance. Balinese celebrates life with full of joy reflecting the purity and gratitude to the life creator, Ida Hyang Widhi Wasa (God the Almighty).

To bring harmony into life, a Balinese has conducted some stages of spiritual procession since they were still in womb. They ride through the birth, maturity and mortality period with gratefulness and ceremonial procession. What an interesting event to follow through.

Bali, mostly Hindu/followers, lists a number of spiritual events, including a ritual event once on full moon or sleeping moon (tilem), great day of Galungan and Kuningan, and other sacred days. Through this event, they express gratefulness to Gods blessings on life.

Cuisine

Like the food of other regions in Indonesia, Balinese food is rice as the central dish served with small portions of spicy, pungent vegetables, fish or meat and served almost always with sambal or chili paste. Bali is a few of the regions in Indonesia whose majority of its people are non Muslims, thus babi guling or roasted suckling pig is a specialty, as is bebek betutu, smoked stuffed duck wrapped in bamboo leaves.

In Jimbaran area, for instance, you can sample seafood dishes while sitting on the beach. Visit this place in the evening, the cool atmosphere and caressing breeze will make your dining experience remarkable.

Climate

With sunshine shining throughout the year, Bali has a tropical monsoon climate, with pleasant day temperatures between 20 to 33 degrees Celsius or 68 to 93 degrees Fahrenheit. Rainy season starts from October to March, when the West monsoon brings heavy showers and high humidity. June to September is considered the driest season, with low humidity and it can be fairly cold in the evenings, the best time for any outdoor activities.

Source:
- http://www.disparda.baliprov.go.id/en/About-Bali2
- http://www.balitourismboard.org/bali_climate.html
- http://www.indonesia.travel/en/discover-indonesia/region-detail/35/bali

MEDICAL SERVICES AND HOSPITALS

Ambulance Service: 118

- **Sanglah General Public Hospital**
  Jalan Diponegoro, Denpasar
  Tel: (+62 361) 227911

- **Bali Royal Hospital**
  Jl. Letda Tantular No.6, Renon, Denpasar Timur
  Telephone: (+62 361) 247 499
  Fax: (+62 361) 226 051
  E-mail: info@baliroyalhospital.co.id
  URL: http://www.baliroyalhospital.co.id/

- **Kasih Ibu General Hospital**
  Jl. Teuku Umar No.120, Dauh Puri Kauh, Denpasar Barat
  Telephone: (+62 361) 3003030
  Fax: (+62 361) 223 850
  URL: http://www.kasihibuhospital.com/

- **Surya Husada Hospital**
  Jalan Pulau Serangan no 7 - Bali, 80361 Indonesia
  Telephone: (+62 361) 233787
  Fax: (+62 361) 231177
  URL: https://suryahusadha.com

- **Prima Medika Hospital**
  Jalan Pulau Serangan No. 9X Denpasar Bali
  Telephone: (+62 361) 236225
  Fax: (+62 361) 236203
  URL: http://www.primamedika.com/

FOREIGN REPRESENTATIVE OFFICE

- **Consulate Office of Australia**
  Jalan Tantular, Renon No. 32 Denpasar, Bali-80324
  Tel: 62-361-2000100; Facsimile: : 62-361-2000195

- **Consulate Office of Brazil**
  Jalan Raya Legian No. 186, Kuta-80361
  Tel: 62-361-757775; Fax: 62-361-751005

- **Consulate Office of Chile**
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  Tel: 62-361-281503; Fax: 62-361-285216

- **Consulate Office of the Czech Republic**
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  Tel: 62-361-286465; Fax: 62-361-286408

- **Consular Agency of France**
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- **Consulate Office of Germany**
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  Tel: 62-361-288535, 62-361-288826; Fax: 62-361-288826

- **Consulate Office of Hungary**
  Jalan Bypass Ngurah Rai No. 219, Sanur
  Tel: 62-361-287701; Fax: 62-361-735232

- **Consulate Office of Italy**
  Lotus Enterprise Building
  Jalan Bypass Ngurah Rai, Jimbaran, Denpasar
  Tel: 62-361-701005; Fax 62-361-701005

- **Consulate Office of Japan**
  Jalan Raya Puputan, Renon Denpasar No.170
  Tel: 62-361-227628; Fax: 62-361-231308

- **Consulate Office of Malaysia**
  Alam Kulkul Boutique Resort
  Jalan Pantai Kuta, Legian, Bali 80030
  Tel: 62-361-752520 / 766373; Fax: 62-361-766373

- **Consulate Office of Mexico**
  Puri Astina Building
  Jalan Prof. Moh. Yamin 1-A, Renon, Denpasar
  Tel: 62-361-223266; Fax: 62-361-244568

- **Consulate Office of Netherlands**
  Jalan Raya Kuta No: 127, Kuta
  Tel: 62-361-761502; Fax: 62-361-752777

- **Consulate Office of Norway & Denmark**
  Mimpi Resort, Kawasan Bukit Permai, Jimbaran
  Tel: 62-361-701070 (ext 32); Fax: 62-361-701073, 62-361-701074

- **Consulate Office of Spain**
  Komplek Istana Kuta Galeria Blok Vallet 2 No. 11,
  Tel: 62-361-769286; Fax: 62-361-769186

- **Consulate Office of Sweden& Finland**
  Segara Village Hotel
  Jalan Segara Ayu, Sanur-80228
  Tel: 62-361-288407; Fax: 62-361-287242

- **Consulate Office of Switzerland & Austria**
  Kompleks Istana Kuta Galleria Blok Valet 2 No. 12,
  Jalan Patih Jelantik Kuta-80361
  Tel: +62-361-751735; Fax: 62-361-754457

- **Consulate Office of Thailand**
  Jalan Puputan Raya No. 81, Renon, Denpasar-80235
  Tel: 62-361-263310; Fax: 62-361-238044

- **Consulate Office of Timor Leste**
  Jalan Prof. Yamin No. 4, Renon Denpasar
  Tel: 62-361-235093; Fax: 62-361-235092

- **Consulate Office of the United Kingdom**
  Jl. Tirta Nadi 2 No. 20
  Tel: 62-21-2356 5200; Fax: 62-21-3983 5538

- **Consular Agency of the United States of America**
  Jalan Hayam Wuruk 310, Tanjung Bungkak, Denpasar-80235
  Tel: 62-361-233605; Fax: 62-361-222426

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In the series of activities of the 54th Anniversary of Udayana University and the 51st Anniversary of Faculty of Engineering,our Department of Electrical and Computer Engineering Udayana University held four (4) activities, namely:

1. The International Conference on Smart Green Technology in Electrical and Information System (ICSGTEIS 2016)
2. International Workshop on "e-Government Implementation toward Smart City"
3. Udayana University IEEE Student Branch Workshop "Internet of Thing for Smart City"
4. International Student Conference by Udayana University IEEE Student Branch

ICSGTEIS 2016 Secretariat

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