ICB 2015

The 8ᵗʰ IAPR International Conference on Biometrics

May 19-22, 2015 - Phuket, Thailand

Technical Co-Sponsors

IAPR

IEEE
Biometrics Council

We would like to convey our warmest welcome to all attendees of this
8th edition of the IAPR International Conference on Biometrics – ICB 2015!

It has been a great privilege to work in the last two years to shape the premiere international scientific conference in Biometrics. Even though relatively young, this conference series comes from the merging in 2006 of two highly reputed conferences: the Audio- and Video-based Personal Authentication (AVBPA) series, running since 1997, and the International Conference on Biometric Authentication (ICBA) series, running since 2004. Since then, this has been the flagship conference of the IAPR Technical Committee on Biometrics (TC4) who greatly helped in maintaining a very high scientific standard and making this conference always a great success. It always provided an ideal forum not only to expose recent research outcomes, but also to share and making new ideas blossoming. We hope that you will also enjoy Phuket as this year's venue with a touch of the vibrant Thai history, culture and cuisine.

The program includes a most distinguished set of keynote speakers: Dr. Deepak Chandra, chief scientist at Google Inc., Dr. Sebastien Marcel, from IDIAP, and Prof. Yan Shuicheng, a pioneer of deep learning. All of them are addressing new and exciting avenues in Biometric technologies which we hope may serve as an inspiration to look forward into new research ideas, especially for students and early career researchers.

Two panels will address some very interesting and hot topics in today's Biometrics research and applications. The former, entitled "Biometric Technology Adoption and Challenges for Seamless Border Control in ASEAN", will particularly address a very critical and interesting issue related to the adoption of Biometric technologies for border control in the ASEAN region (ASEAN stands for "Association of Southeast Asian Nations", established on 8 August 1967 in Bangkok, Thailand). The panel will promote an interesting discussion on the technological, social and legal challenges that will motivate biometric researchers. The second panel, entitled "Promote High Quality Biometric Research", follows the one introduced at the IJCB conference in 2014. Composed of the most distinguishing scientists from both academia and industry, it will allow to focus on the most promising research avenues in Biometrics and to identify the hindering factors in advancing the field. During the first day of the conference, four invited tutorials will be offered by distinguished researchers. The tutorial topics were chosen to highlight the most promising research directions in Biometrics and to provide the current state of the art in advanced Biometric research. The tutorial speakers include Prof. Kong Wai-Kin Adams (Forensic Biometrics), Prof. Brian Lovell (Mobile Biometrics), Dr. Sebastien Marcel (Anti-spoofing), and Prof. Wolf Lior (Deep learning for face recognition).

This conference would not have been possible without the tireless work and continuous support of many people. First and foremost, we are grateful to the very generous support of our platinum sponsor Siew-Sngiem Award, gold co-sponsors Kasetsart University and Chanwanich, and silver co-sponsors, ST Electronics and Safran Morpho. They enabled us to keep the registration fee affordable and offer a number of best paper and poster awards. We also acknowledge the support from Thailand's agencies including the Ministry of Information and Communication Technology, the Ministry of Justice, and the Chanwanich Security Printing Co.ltd, especially in relation to the organization of the panel on the adoption of Biometric technologies in the ASEAN region.

The Program Chairs have made a tremendous effort to ensure the high quality of papers and also to foster new ideas to be brought in. We greatly appreciate their contribution to this conference. We are also very grateful for the active involvement of the Organizing Committee: the Area Chairs for managing the reviews, the Program Committee for performing their reviews, the Competition Chairs for arranging six competitions, the Tutorial Chairs for inviting four tutorial sessions, the Doctor Consortium Chairs for arranging the DC session, and the Publication Chairs for conducting the proceedings. A special recognition is devoted to the conference's local arrangement team from Department of Electrical Engineering, Faculty of Engineering, Kasetsart University. They endeavored to handle all the local arrangement details along with faculties and graduate students involved to ensure a smooth functioning of the conference. Without their dedication, countless hours and boundless energy, this conference would not have been possible. We are also very grateful to IAPR TC4 and IEEE Biometrics Council for their support.

Biometrics is one of the most successful disciplines in Pattern Recognition. It showed an unexpected versatility in helping to address several problems ranging from security to forensic science to man-machine interaction. This 8th edition of ICB has the goal of pushing this further and suggesting novel research avenues for the technologies to come. It is a challenging and fascinating route in science. We really hope you will enjoy being part of this enchanting journey with us and to leave this conference and the "land of smiles" with good memories.

Massimo Tistarelli, Wei-Yun Yau, and Vutipong Areekul

ICB-2015 General Chairs

It is our pleasure and privilege to welcome you to the ICB 2015.

The ICB 2015 call for papers encouraged submissions in diverse biometrics topics and received 169 submissions from which a total of 76 papers were accepted (corresponding to an acceptance rate of about 45%). While submissions covered many biometrics research topics, most submissions were in the area of Face, followed by Fingerprint, Iris & Ocular, Security & Spoofing and Soft Biometrics, in that order. The accepted papers were organized into oral and poster sessions based on the reviewers' recommendations, with an eye towards maintaining the thematic integrity of various sessions. This resulted in 31 papers being selected for oral presentation and 45 papers for poster presentation. The two afternoon sessions on May 22 will feature the six best-reviewed papers. Make sure not to miss those sessions!

The ICB 2015 review process involved 176 reviewers who provided 560 reviews and 21 meta-reviewers who provided additional meta-reviews. Most reviewers reviewed five or fewer papers (with only 4 of the 176 reviewers reviewing 6 or more papers), allowing for more careful reviews of submitted papers. Authors were also given an opportunity to provide rebuttals and all these inputs were taken into account in selecting the papers to be presented at ICB 2015. Submissions co-authored by area chairs and program chairs were reviewed independently and these authors were not involved in the final decisions on those papers. In spite of our efforts, it is possible that some interesting submissions were not accepted to the conference, perhaps due to presentation problems. We sympathize for such potential occurrences and hope that those authors benefit from the reviews provided, as they improve their papers for future submissions.

The technical program of the ICB 2015 includes papers from many parts of the world, an evidence of the growing world-wide importance of biometrics. The ICB 2015 technical program is enhanced by 4 tutorials on May 19 and 3 invited talks by Deepak Chandra, Sebastien Marcel and Shuicheng Yan. In addition, there are two panel sessions, one on Biometric Technology Adoption and Challenges for Seamless Border Control in ASEAN and the other on Promoting High Quality Biometrics Research. We hope that this collection of technical papers, tutorials, keynote talks and panel discussions as well as scientific networking opportunities with research colleagues will provide an enriching environment for the attendees.

Finally, we would like to thank all who helped in our conference-related tasks, especially the authors, reviewers, meta-reviewers, tutorial speakers as well as the invited speakers.

Vijayakumar Bhagavatula, Mark S. Nixon, and Stan Z. Li

ICB 2015 Program Chairs

Tuesday, May 19, 2015

Time	Program
8:00-9:00	**Registration** Venue: Front Area of Merlin Grand Ballroom
9:00-12:30	**Tutorial Morning Session TM1: An Overview of the Recent Development of Computational Forensics for Criminal and Victim Identification** Kong Wai-Kin Adams (*Nanyang Technological University, Singapore*) Venue: Merlin Grand Ballroom A (Coffee Break at 10:30-11:00)
9:00-12:30	**Tutorial Morning Session TM2: Remote, Mobile, and Wearable Video Face Recognition for Surveillance** Brian Lovell (*University of Queensland, Australia*) Venue: Merlin Grand Ballroom B (Coffee Break at 10:30-11:00)
12:30-14:00	**Lunch Break** Venue: Tri-Trang Restaurant
14:00-17:30	**Tutorial Afternoon Session TA1: Spoofing and Anti-Spoofing in Biometrics: lessons learned from the TABULA RASA project** Sébastien Marcel (*Idiap research institute, Switzerland*) Venue: Merlin Grand Ballroom A (Coffee Break at 15:30-16:00)
14:00-17:30	**Tutorial Afternoon Session TA2: Deep Learning Methods for Face Recognition** Lior Wolf (*Tel Aviv University, Israel*) Venue: Merlin Grand Ballroom B (Coffee Break at 15:30-16:00)
17:30-18:30	**Registration** Venue: Front Area of Merlin Grand Ballroom

Wednesday, May 20, 2015

Time	Program
8:00-9:00	**Registration** Venue: Front Area of Merlin Grand Ballroom
9:00-9:10	**Welcome Message from General Co-Chairs** Massimo Tistarelli (*University of Sassari, Italy*), Wei-Yun Yau (*Institute for Infocomm Research, Singapore*), and Vutipong Areekul (*Kasetsart University, Thailand*)
9.10-9.25	**Welcome Message from ICB2015 Guest of Honour** Methini Thepmani (*Permanent Secretary, Ministry of Information and Communication Technology, Thailand*)
9:25-9:30	**Welcome Message from ICB2015 Host** Peerayuth Charnsethikul (*Dean, Faculty of Engineering, Kasetsart University, Thailand*) Venue: Merlin Grand Ballroom C
9:30-10:30	**Keynote speech: "MultiModal Smartphone Authentication"** Deepak Chandra (*Google's Advanced Technology and Projects (ATAP) Organization, USA*) Session Chair: Anil K. Jain (*Michigan State University, USA*) Venue: Merlin Grand Ballroom C
10:30-11:00	**Coffee Break** Venue: Front Area of Merlin Grand Ballroom

11:00-12:00		**Oral Session I: Iris and Ocular** Session Chair: Mayank Vatsa (*IIIT-Delhi, India*) Venue: Merlin Grand Ballroom C
11:00-11:20	OS1-1	**Recompression Effects in Iris Segmentation** Thomas Bergmueller (*Authentic Vision, Austria*), Eleftherios Christopoulos (*University of Salzburg, Austria*), Martin Schnoell (*University of Salzburg, Austria*), and Andreas Uhl (*University of Salzburg, Austria*)
11:20-11:40	OS1-2	**A Biomechanical Approach to Iris Normalization** Inmaculada Tomeo-Reyes (*Queensland University of Technology, Australia*), Arun Ross (*Michigan State University, USA*), Antwan D. Clark (*West Virginia University, USA*), and Vinod Chandran (*Queensland University of Technology, Australia*)
11:40-12:00	OS1-3	**Cross-Sensor Iris Verification Applying Robust Fused Segmentation Algorithms** Eduardo Garea Llano (*Advanced Technologies Application Center - CENATAV, Cuba*), Juan M. Colores Vargas (*Universidad Autónoma de Baja California - ECITEC, México*), Mireya S. García-Vázquez (*Instituto Politécnico Nacional - CITEDI, México*), Luis M. Zamudio Fuentes (*Instituto Politécnico Nacional - CITEDI, México*), and Alejandro A. Ramírez-Acosta (*MIRAL R&D&I, USA*)
12:00-12:30		**Poster Highlights I** Session Co-Chairs: Brendan F. Klare (*Noblis, USA*) and Xiaoming Liu (*Michigan State University, USA*) Venue: Merlin Grand Ballroom C
12:30-14:00		**Lunch Break** Venue: Tri-Trang Restaurant
14:00-15:00		**Panel I: Biometric Technology Adoption and Challenges for Seamless Border Control in ASEAN** Session Co-Chairs: Wei-Yun Yau (*Institute for Infocomm Research, Singapore*) and Pratit Santipraphob (*Assumption University, Thailand*) Panelist: Azman azra bin Abdul Rahman (*Ministry of Home Affairs, Malaysia*), Peerapol Promwong (*Chanwanich Security Printing Co.ltd, Thailand*), and Vutipong Areekul (*Kasetsart University, Thailand*) Venue: Merlin Grand Ballroom C
15:00-16:30		**Poster Session I / Demo Session I** Session Co-Chairs: Brendan F. Klare (*Noblis, USA*) and Xiaoming Liu (*Michigan State University, USA*) Venue: Merlin Grand Ballroom AB
	PS1-1	**Predicting Segmentation Errors in an Iris Recognition System** Nitin K. Mahadeo (*Monash University, Australia*), Gholamreza Haffari (*Monash University, Australia*), and Andrew P. Papliński (*Monash University, Australia*)
	PS1-2	**On Fusion for Multispectral Iris Recognition** Peter Wild (*University of Reading, UK*), Petru Radu (*University of Reading, UK*), and James Ferryman (*University of Reading, UK*)
	PS1-3	**Authentication Based on a Changeable Biometric using Gesture Recognition with the Kinect** Benoît Ducray (*University of London, UK*), Sheila Cobourne (*University of London, UK*), Keith Mayes (*University of London, UK*), and Konstantinos Markantonakis (*University of London, UK*)
	PS1-4	**I Know That Voice: Identifying the Voice Actor Behind the Voice** Lior Uzan (*Tel Aviv University, Israel*) and Lior Wolf (*Tel Aviv University, Israel*)
	PS1-5	**Discriminative Regularized Metric Learning for Person Re-Identification** Venice Erin Liong (*Advanced Digital Sciences Center, Singapore*), Yongxin Ge (*Chongqing University, China*), and Jiwen Lu (*Advanced Digital Sciences Center, Singapore*)
	PS1-6	**One-handed Keystroke Biometric Identification Competition** John V. Monaco (*Pace University, USA*), Gonzalo Perez (*Pace University, USA*), Charles C. Tappert (*Pace University, USA*), Patrick Bours (*Gjøvik University College, Norway*), Soumik Mondal (*Gjøvik University College, Norway*), Sudalai Rajkumar (*Tiger Analytics, India*), Aythami Morales (*Universidad Autónoma de Madrid, Spain*), Julian Fierrez (*Universidad Autónoma de Madrid, Spain*), and Javier Ortega-Garcia (*Universidad Autónoma de Madrid, Spain*)
	PS1-7	**Appearance-Based Person Re-identification by Intra-Camera Discriminative Models and Rank Aggregation** Raphael Felipe de Carvalho Prates (*Universidade Federal de Minas Gerais, Brazil*), and William Robson Schwartz (*Universidade Federal de Minas Gerais, Brazil*)
	PS1-8	**Viewpoint Invariant Subject Retrieval via Soft Clothing Biometrics** Emad Sami Jaha (*King Abdulaziz University, Saudi Arabia*) and Mark S. Nixon (*University of Southampton, UK*)
	PS1-9	**Fine-Grained Face Verification: Dataset and Baseline Results** Junlin Hu (*Nanyang Technological University, Singapore*), Jiwen Lu (*Advanced Digital Sciences Center, Singapore*), and

	PS1-10	**The ICB-2015 Competition on Finger Vein Recognition** Ran Xian (*Peking University, China*), Liao Ni (*Peking University, China*), and Wenxin Li (*Peking University, China*)
	PS1-11	**VT-KFER: A Kinect-based RGBD+Time Dataset for Spontaneous and Non-Spontaneous Facial Expression Recognition** Sherin Aly (*Virginia Tech, USA*), Andrea Trubanova (*Virginia Tech, USA*), Lynn Abbott (*Virginia Tech, USA*), Susan White (*Virginia Tech, USA*), and Amira Youssef (*Alexandria University, Egypt*)
	PS1-12	**Live Face Video vs. Spoof Face Video: Use of Moiŕe Patterns to Detect Replay Video Attacks** Keyurkumar Patel (*Michigan State University, USA*), Hu Han (*Michigan State University, USA*), Anil K. Jain (*Michigan State University, USA*), and Greg Ott (*KEYW Corporation, USA*)
	PS1-13	**Annotated Crowd Video Face Database** Tejas I. Dhamecha (*IIIT-Delhi, India*), Priyanka Verma (*IIIT-Delhi, India*), Mehak Shah (*IIIT-Delhi, India*), Richa Singh (*IIIT-Delhi, India*), and Mayank Vatsa (*IIIT-Delhi, India*)
	PS1-14	**Sensor Ageing Impact on Finger-Vein Recognition** Christof Kauba (*University of Salzburg, Austria*) and Andreas Uhl (*University of Salzburg, Austria*)
	PS1-15	**Harnessing Social Context for Improved Face Recognition** Romil Bhardwaj (*IIIT-Delhi, India*), Gaurav Goswami (*IIIT-Delhi, India*), Richa Singh (*IIIT-Delhi, India*), and Mayank Vatsa (*IIIT-Delhi, India*)
	PS1-16	**Hierarchical Multi-Label Framework for Robust Face Recognition** Lingfeng Zhang (*University of Houston, USA*), Pengfei Dou (*University of Houston, USA*), Shishir K. Shah (*University of Houston, USA*), and Ioannis A. Kakadiaris (*University of Houston, USA*)
	PS1-17	**INDUSTRY/DEMO TRACK** **Fingerprint Authentication System On Card** Lawrence Chen Tai Pang (*Institute for Infocomm Research, Singapore*)
	PS1-18	**DOCTOR CONSORTIUM** **Liveliness-Based Adaptive Biometric System Using Iris and Sclera** Abhijit Das (*Griffith University, Australia*)
16:00-16:30		**Coffee Break** Venue: Pre Function Area, Merlin Grand Ballroom
16:30-17:30		**Oral Session II: Mobile and Remote Biometrics** Session Chair: Raul Sanchez Reillo (*Carlos III University of Madrid, Spain*) Venue: Merlin Grand Ballroom C
16:30-16:50	OS2-1	**Continuous Authentication of Mobile User: Fusion of Face Image and Inertial Measurement Unit Data** David Crouse (*Michigan State University, USA*), Hu Han (*Michigan State University USA*), Deepak Chandra (*Google, USA*), Brandon Barbello (*Google Inc., USA*), and Anil K. Jain (*Michigan State University, USA*)
16:50-17:10	OS2-2	**Multi-modal Authentication System for Smartphones Using Face, Iris and Periocular** Kiran B. Raja (*Gjøvik University College, Norway*), R. Raghavendra (*Gjøvik University College, Norway*), Martin Stokkenes (*Gjøvik University College, Norway*), and Christoph Busch (*Gjøvik University College, Norway*)
17:10-17:30	OS2-3	**A Touch-less Fingerphoto Recognition System for Mobile Hand-held Devices** Kamlesh Tiwari (*Indian Institute of Technology Kanpur, India*) and Phalguni Gupta (*National Institute of Tecnical Teachers' Training & Research, India*)
17:30-18:30		**Oral Session III: Other Biometrics** Session Chair: Brian Lovell (*University of Queensland, Australia*) Venue: Merlin Grand Ballroom C
17:30-17:50	OS3-1	**Touch-Interaction Behavior for Continuous User Authentication on Smartphones** Chao Shen (*Xi'an Jiaotong University, China*), Yong Zhang (*Xi'an Jiaotong University, China*), Zhongmin Cai (*Xi'an Jiaotong University, China*), Tianwen Yu (*Xi'an Jiaotong University, China*), and Xiaohong Guan (*Xi'an Jiaotong University, China*)
17:50-18:10	OS3-2	**Optimal Feature Selection and Inter-Operability Compensation for On-Line Biometric Signature Authentication** Ruben Tolosana (*Universidad Autonoma de Madrid, Spain*), Ruben Vera-Rodriguez (*Universidad Autonoma de Madrid, Spain*), Javier Ortega-Garcia (*Universidad Autonoma de Madrid, Spain*), and Julian Fierrez (*Universidad Autonoma de Madrid, Spain*)
18:10-18:30	OS3-3	**Gait Regeneration for Recognition** Daigo Muramatsu (*Osaka University, Japan*), Yasushi Makihara (*Osaka University, Japan*), and Yasushi Yagi (*Osaka University, Japan*)
19:00-22:00		**Welcome Reception / IAPR TC4 - IEEE BC Joint Presentation** Venue: Beach Lawn near Tri-Trang Restaurant

		Thursday, May 21, 2015
8:00-9:00		**Registration** Venue: Front Area of Merlin Grand Ballroom
9:00-10:00		**Keynote speech: "Reproducible research in Biometrics: moving to the BEAT"** Sébastien Marcel (*Idiap research institute, Switzerland*) Session Chair: Vutipong Areekul (*Kasetsart University, Thailand*) Venue: Merlin Grand Ballroom C
10:00-10:20		**Coffee Break** Venue: Front Area of Merlin Grand Ballroom
10:20-12:00		**Oral Session IV: Face** Session Co-Chairs: Josef Kittler (*University of Surrey, UK*) and Stan Z. Li (*Chinese Academy of Sciences, China*) Venue: Merlin Grand Ballroom C
10:20-10:40	OS4-1	**Color Local Phase Quantization (CLPQ)- A New Face Representation Approach using Color Texture Cues** Akanksha Joshi (*Centre for Development of advanced Computing, India*) and Abhishek Kumar Gangwar (*Centre for Development of advanced Computing, India*)
10:40-11:00	OS4-2	**Illumination-Normalized Face Recognition Using Chromaticity Intrinsic Image** Wuming Zhang (*Ecole Centrale de Lyon, France*), Xi Zhao (*Xi'an Jiaotong University, China*), Di Huang (*Beihang University, China*), Jean-Marie MORVAN (*Université Claude Bernard Lyon 1, France*), Yunhong Wang (*Beihang University, China*), and Liming Chen (*Ecole Centrale de Lyon, France*)
11:00-11:20	OS4-3	**Example-Based 3D Face Reconstruction from Uncalibrated Frontal and Profile Images** Jing Li (*Sichuan University, China*), Shuqin Long (*Sichuan University, China*), Dan Zeng (*Sichuan University, China*), and Qijun Zhao (*Sichuan University, China*)
11:20-11:40	OS4-4	**3D Face Analysis for Demographic Biometrics** Ryan Tokola (*Oak Ridge National Laboratory, USA*), Aravind Mikkilineni (*Oak Ridge National Laboratory, USA*), and Christopher Boehnen (*Oak Ridge National Laboratory, USA*)
11:40-12:00	OS4-5	**Sparse Support Faces** Battista Biggio (*University of Cagliari, Italy*), Marco Melis (*University of Cagliari, Italy*), Giorgio Fumera (*University of Cagliari, Italy*), and Fabio Roli (*University of Cagliari, Italy*)
12:00-12:30		**Poster Highlights II** Session Co-Chairs: Mark S. Nixon (*Univerity of Southampton, UK*) and Richa Singh (*IIIT Delhi, India*) Venue: Merlin Grand Ballroom C
12:30-14:00		**Lunch Break** Venue: Tri-Trang Restaurant
12:30-14:00		**Doctoral Consortium Meeting** Session Chair: Arun Ross (*Michigan State University, USA*) Venue: Tongkha Room (*Lunch will be served for only 20 persons, please make reservation if you want to attend.*)
14:00-15:00	SP1-1	**Panel II: Promote High Quality Biometrics Research** Session Chair: Anil K. Jain (*Michigan State University, USA*) Panelist: Deepak Chandra (*Google Inc., USA*), Josef Kittler (*University of Surrey, UK*), Brendan F. Klare (*Noblis, USA*), and Stan Z. Li (*Chinese Academy of Sciences, China*) Venue: Merlin Grand Ballroom C
15:00-16:30		**Poster Session II** Session Co-Chairs: Mark S. Nixon (*Univerity of Southampton, UK*) and Richa Singh (*IIIT Delhi, India*) Venue: Merlin Grand Ballroom AB
	PS2-1	**A Longitudinal Study of Automatic Face Recognition** Lacey Best-Rowden (*Michigan State University, USA*) and Anil K. Jain (*Michigan State University, USA*)
	PS2-2	**A Verify-Correct Approach to Person Re-identification Based on Partial Least Squares Signatures** Gabriel Lorencetti Prado (*University of Campinas, Brazil*), Helio Pedrini (*University of Campinas, Brazil*), and William Robson Schwartz (*Universidade Federal de Minas Gerais, Brazil*)
	PS2-3	**Unconstrained Face Detection: State of the Art Baseline and Challenges** Jordan Cheney (*Noblis, USA*), Ben Klein, (*Noblis, USA*), Anil K. Jain (*Michigan State University, USA*), and Brendan F. Klare (*Noblis, USA*)
	PS2-4	**Recognition at a Long Distance: Very Low Resolution Face Recognition and Hallucination** Min-Chun Yang (*Academia Sinica, Taiwan*), Chia-Po Wei (*Academia Sinica, Taiwan*), Yi-Ren Yeh (*Chinese Culture University, Taiwan*), and Yu-Chiang Frank Wang (*Academia Sinica, Taiwan*)

	PS2-5	**An Efficient Approach for Clustering Face Images** Charles Otto (*Michigan State University, USA*), Brendan F. Klare (*Noblis*, *USA*), and Anil K. Jain (*Michigan State University, USA*)
	PS2-6	**Composite Sketch Recognition via Deep Network - A Transfer Learning Approach** Paritosh Mittal (*IIIT-Delhi, India*), Mayank Vatsa (*IIIT-Delhi, India*), and Richa Singh (*IIIT-Delhi, India*)
	PS2-7	**Quaternion-Based Local Binary Patterns for Illumination Invariant Face Recognition** Dayron Rizo-Rodriguez (*Université de Sherbrooke, Canada*) and Djemel Ziou (*Université de Sherbrooke, Canada*)
	PS2-8	**Annotating Unconstrained Face Imagery: A Scalable Approach** Emma Taborsky (*Noblis, USA*), Kristen Allen (*Noblis, USA*), Austin Blanton (*Noblis, USA*), Anil K. Jain (*Michigan State University, USA*), and Brendan F. Klare (*Noblis, USA*)
	PS2-9	**Discriminative Transfer Learning for Single-Sample Face Recognition** Junlin Hu (*Nanyang Technological University, Singapore*), Jiwen Lu (*Advanced Digital Sciences Center, Singapore*), Xiuzhuang Zhou (*Capital Normal University, China*), and Yap-Peng Tan (*Nanyang Technological University, Singapore*)
	PS2-10	**Attribute Preserved Face De-identification** Amin Jourabloo (*Michigan State University, USA*), Xi Yin (*Michigan State University, USA*), and Xiaoming Liu (*Michigan State University, USA*)
	PS2-11	**Large Margin Coupled Feature Learning for Cross-Modal Face Recognition** Yi Jin (*Beijing Jiaotong University, China*), Jiwen Lu (*Advanced Digital Sciences Center, Singapore*), and Qiuqi Ruan (*Beijing Jiaotong University, China*)
	PS2-12	**A Transfer Learning Approach to Cross-Database Facial Expression Recognition** Ronghang Zhu (*Sichuan University, China*), Tingting Zhang (*Sichuan University, China*), Qijun Zhao (*Sichuan University, China*), and Zhihong Wu (*Sichuan University, China*)
	PS2-13	**Secure Face Template Generation via Local Region Hashing** Rohit K. Pandey (*University at Buffalo, SUNY, USA*) and Venu Govindaraju (*University at Buffalo, SUNY, USA*)
16:00-16:30		**Coffee Break** Venue: Front Area of Merlin Grand Ballroom
16:30-17:30		**Oral Session V: Security & Spoofing** Session Chair: Julian Fierrez (*Universidad Autonoma de Madrid, Spain*) Venue: Merlin Grand Ballroom C
16:30-16:50	OS5-1	**Correlation Based Fingerprint Liveness Detection** Zahid Akhtar (*University of Udine, Italy*), Christian Micheloni (*University of Udine, Italy*), and Gian Luca Foresti (*University of Udine, Italy*)
16:50-17:10	OS5-2	**The Relation Between the Secrecy Rate of Biometric Template Protection and Biometric Recognition Performance** Raymond N.J. Veldhuis (*University of Twente, Netherlands*)
16:10-17:30	OS5-3	**On the Vulnerability to Palm Vein Recognition to Spoofing Attacks** Pedro Tome (*Idiap Research Institute, Switzerland*) and Sébastien Marcel (*Idiap Research Institute, Switzerland*)
17:30-18:30		**Oral Session VI: Hand and Vein Biometrics** Session Chair: Andreas Uhl (*University of Salzburg, Austria*) Venue: Merlin Grand Ballroom C
17:30-17:50	OS6-1	**Improving Feature based Dorsal Hand Vein Recognition through Random Keypoint Generation and Fine-Grained Matching** Renke Zhang (*Beihang University, China*), Di Huang (*Beihang University, China*), Yiding Wang, (*North China University of Technology, China*), and Yunhong Wang (*Beihang University, China*)
17:50-18:10	OS6-2	**Palm Region Extraction for Contactless Palmprint Recognition** Koichi Ito (*Tohoku University, Japan*), Takuto Sato (*Tohoku University, Japan*), Shoichiro Aoyama (*Tohoku University, Japan*), Shuji Sakai (*Tohoku University, Japan*), Shusaku Yusa (*Tohoku University, Japan*), and Takafumi Aoki (*Tohoku University, Japan*)
18:10-18:30	OS6-3	**Exploring Dorsal Finger Vein Pattern for Robust Person Recognition** Raghavendra Ramachandra (*Gjøvik University College, Norway*) and Christoph Busch (*Gjøvik University College, Norway*)
19:00-22:00		**Conference Banquet / Awards Ceremony** Venue: Blue Village Beach Lawn

		Friday, May 22, 2015
8:00-9:00		**Registration** Venue: Front Area of Merlin Grand Ballroom
9:00-10:00		**Keynote speech: "Deep Learning and Biometrics"** Yan Shuicheng (*National University of Singapore, Singapore*) Session Chair: Wei-Yun Yau (*Institute for Infocomm Research, Singapore*) Venue: Merlin Grand Ballroom C
10:00-10:20		**Coffee Break** Venue: Front Area of Merlin Grand Ballroom
10:20-12:00		**Oral Session VII: Fingerprint** Session Co-Chairs: Javier Ortega-Garcia (*Universidad Autonoma de Madrid, Spain*) and Kai Cao (*Michigan State University, USA*) Venue: Merlin Grand Ballroom C
10:20-10:40	OS7-1	**Latent Orientation Field Estimation via Convolutional Neural Network** Kai Cao (*Michigan State University, USA*) and Anil K. Jain (*Michigan State University, USA*)
10:40-11:00	OS7-2	**Latent Fingerprint Match using Minutia Spherical Coordinate Code** Fengde Zheng (*Beijing Hisign Technology Co.Ltd., China*) and Chunyu Yang (*Beijing Hisign Technology Co.Ltd., China*)
11:00-11:20	OS7-3	**Crowd Powered Latent Fingerprint Identification: Fusing AFIS with Examiner Markups** Sunpreet S. Arora (*Michigan State University, USA*), Kai Cao (*Michigan State University, USA*), Anil K. Jain (*Michigan State University, USA*), and Gregoire Michaud (*Michigan State Police, USA*)
11:20-11:40	OS7-4	**Latent Fingerprints Segmentation Based on Rearranged Fourier Subbands** Phumpat Ruangsakul (*Kasetsart University, Thailand*), Vutipong Areekul (*Kasetsart University, Thailand*), Krisada Phromsuthirak (*Kasetsart University, Thailand*), and Arucha Rungchokanun (*Kasetsart University, Thailand*)
11:40-12:00	OS7-5	**On the Spatial Inhomogeneity of Fingerprint Minutiae: A Regression Approach** Shuiwang Li (*Sichuan University, China*), Yi Wang (*Hong Kong Baptist University, China*), Qijun Zhao (*Sichuan University, China*), and Yi Zhang (*Sichuan University, China*)
12:00-12:30		**Poster Highlights III** Session Co-Chairs: Jiwen Lu (*Advanced Digital Sciences Center, Singapore*) and Raymond Veldhuis (*University of Twente, Netherlands*) Venue: Merlin Grand Ballroom C
12:30-14:00		**Lunch Break** Venue: Tri-Trang Restaurant
14:00-15:00		**Plenary Talk IAPR Young Biometric Investigator Award** Session Chair: Arun Ross (*Michigan State University, USA*) Venue: Merlin Grand Ballroom C
15:00-16:30		**Poster Session III** Session Co-Chairs: Jiwen Lu (*Advanced Digital Sciences Center, Singapore*) and Raymond Veldhuis (*University of Twente, Netherlands*) Venue: Merlin Grand Ballroom AB
	PS3-1	**k-Nearest Neighborhood Structure (k-NNS) based Alignment-free Method for Fingerprint Template Protection** Mulagala Sandhya (*Institute for Development and Research in Banking Technology, India*) and Munaga V.N.K Prasad (*Institute for Development and Research in Banking Technology, India*)
	PS3-2	**Touchless Multiview Fingerprint Quality Assessment: Rotational Bad-positioning Detection Using Artificial Neural Networks** Cauê Zaghetto (*University of Brasília, Brazil*), Alexandre Zaghetto (*University of Brasília, Brazil*), Flávio de B. Vidal (*University of Brasília, Brazil*), and Luiz Henrique Morais Aguiar (*University of Brasília, Brazil*)
	PS3-3	**Fingerprint Classification Using a Simplified Rule-Set Based on Directional Patterns and Singularity Features** Kribashnee Dorasamy (*Council for Scientific and Industrial Research, South Africa*), Leandra Webb (*Council for Scientific and Industrial Research, South Africa*), Jules Tapamo (*University of KwaZulu-Natal, South Africa*), and Nontokozo P. Khanyile (*Council for Scientific and Industrial Research, South Africa*)
	PS3-4	**Vectorized Fingerprint Representation using Minutiae Relation Code** Narishige Abe (*Fujitsu Laboratories Ltd., Japan*) and Takashi Shinzaki (*Fujitsu Laboratories Ltd., Japan*)

PS3-5	**Band Selection for Gabor Feature Based Hyperspectral Palmprint Recognition** Linlin Shen (*Shenzhen University, China*), Ziyi Dai (*Shenzhen University, China*), Sen Jia (*Shenzhen University, China*), Meng Yang (*Shenzhen University, China*), Zhihui Lai (*Shenzhen University, China*), and Shiqi Yu (*Shenzhen University, China*)	
PS3-6	**Towards Bloom Filter-based Indexing of Iris Biometric Data** Christian Rathgeb (*Hochschule Darmstadt, Germany*), Harald Baier (*Hochschule Darmstadt, Germany*), Christoph Busch (*Hochschule Darmstadt, Germany*), and Frank Breitinger (*University of New Haven, USA*)	
PS3-7	**Grid Structured Morphological Pattern Spectrum for Off-line Signature Verification** B.H. Shekar (*Mangalore University, India*), R.K. Bharathi (*S J College of Engineering, India*), Josef Kittler (*University of Surrey, UK*), Yu. V. Vizilter (*State Research Institute of Aviation System, Russia*), and Leonid Mestestskiy (*Moscow State University, Russia*)	
PS3-8	**Algorithms for a Novel Touchless Bimodal Palm Biometric System** Olegs Nikisins (*Institute of Electronics and Computer Science, Latvia*), Teodors Eglitis (*Institute of Electronics and Computer Science, Latvia*), Mihails Pudzs (*Institute of Electronics and Computer Science, Latvia*), and Modris Greitans (*Institute of Electronics & Computer Science, Latvia*)	
PS3-9	**Superpixel based Finger Vein ROI Extraction with Sensor Interoperability** Lu Yang (*Shandong University, China*), Gongping Yang (*Shandong University, China*), Lizhen Zhou (*Shandong University, China*), and Yilong Yin (*Shandong University, China*)	
PS3-10	**Contactless Biometric Hand Geometry Recognition using a Low-Cost 3D Camera** Jan Svoboda (*Universita della Svizzera Italiana Lugano, Switzerland*), Michael Bronstein (*Universita della Svizzera Italiana Lugano, Switzerland*), and Martin Drahansky (*Brno University of Technology, Czech Republic*)	
PS3-11	**Swipe Gesture based Continuous Authentication for Mobile Devices** Soumik Mondal (*Gjøvik University College, Norway*) and Patrick Bours (*Gjøvik University College, Norway*)	
PS3-12	**3D Face Recognition with Asymptotic Cones based Principal Curvatures** Yinhang Tang (*Université de Lyon, France*), Xiang Sun (*King Abdullah University of Science and Technology, Saudi Arabia*), Di Huang (*Beihang University, China*), Jean-Marie Morvan (*King Abdullah University of Science and Technology, Saudi Arabia*), Yunhong Wang (*Beihang Universtiy, China*), and Liming Chen (*Université de Lyon, France*)	
PS3-13	**Face Retriever: Pre-filtering the Gallery via Deep Neural Net** Dayong Wang (*Michigan State University, USA*) and Anil K. Jain (*Michigan State University, USA*)	
PS3-14	**Subspace Learning with Frequency Regularizer: its Application to Face Recognition** Zhen Lei (*Chinese Academy of Sciences, China*), Dong Yi (*Chinese Academy of Sciences, China*), Xiangsheng Huang (*Chinese Academy of Sciences, China*), and Stan Z. Li (*Chinese Academy of Sciences, China*)	
PS3-15	**Combining View-based Pose Normalization and Feature Transform for Cross-Pose Face Recognition** Hua Gao (*École Polytechnique Fédérale de Lausanne, Switzerland*), Hazim Kemal Ekenel (*Istanbul Technical University, Turkey*), and Rainer Stiefelhagen (*Karlsruhe Institute of Technology, Germany*)	
PS3-16	**Audio-Visual Twins Database** Jing Li (*National University of Singapore, Singapore*), Li Zhang (*National University of Singapore, Singapore*), Dong Guo (*Facebook, USA*), Shaojie Zhuo (*Qualcomm, Toronto, Canada*), and Terence Sim (*National University of Singapore, Singapore*)	
16:00-16:30	**Coffee Break** Venue: Front Area of Merlin Grand Ballroom	
16:30-17:30	**Oral Session VIII: Best Reviewed Papers Session I** Session Chair: Stan Z. Li (*Chinese Academy of Sciences, China*) Venue: Merlin Grand Ballroom C	
16:30-16:50	**OS8-1**	**Enhanced On-Line Signature Verification Based on Skilled Forgery Detection Using Sigma-LogNormal Features** Marta Gomez-Barrero (*Universidad Autonoma de Madrid, Spain*), Javier Galbally (*Universidad Autonoma de Madrid, Spain*), Julian Fierrez (*Universidad Autonoma de Madrid, Spain*), Javier Ortega-Garcia (*Universidad Autonoma de Madrid, Spain*), and Réjean Plamondon (*École Polytechnique de Montreal, Canada*)
16:50-17:10	**OS8-2**	**Fast and Robust Self-Training Beard/Moustache Detection and Segmentation** T. Hoang Ngan Le (*Carnegie Mellon University, USA*), Khoa Luu (*Carnegie Mellon University, USA*), and Marios Savvides (*Carnegie Mellon University, USA*)
17:10-17:30	**OS8-3**	**The 1st Competition on Counter Measures to Finger Vein Spoofing Attacks** Pedro Tome (*Idiap Research Institute, Switzerland*), Raghavendra Ramachandra (*Gjøvik University College, Norway*), Christoph Busch (*Gjøvik University College, Norway*), Santosh Tirunagari (*University of Surrey, UK*), Norman Poh, (*University of Surrey, UK*), B.H. Shekar (*University of Surrey, UK*), Diego Gragnaniello (*University of Naples Federico II, Italy*), Carlo Sansone (*University of Naples Federico II, Italy*), Luisa Verdoliva (*University of Naples Federico II, Italy*), and Sébastien Marcel (*Idiap Research Institute, Switzerland*)

17:30-18:30		**Oral Session IX: Best Reviewed Papers Session II** Session Chair: Vijayakumar Bhagavatula (*Carnegie Mellon University, USA*) Venue: Merlin Grand Ballroom C
17:30-17:50	OS9-1	**Single Sensor-based Multi-quality Multi-modal Biometric Score Database and Its Performance Evaluation** Takuhiro Kimura (*Osaka University, Japan*), Yasushi Makihara (*Osaka University, Japan*), Daigo Muramatsu (*Osaka University, Japan*), and Yasushi Yagi (*Osaka University, Japan*)
17:50-18:10	OS9-2	**Security Analysis of Bloom Filter-based Iris Biometric Template Protection** Julien Bringer (*Morpho, France*), Constance Morel (*Morpho, France*), and Christian Rathgeb (*Hochschule Darmstadt, Germany*)
18:10-18:30	OS9-3	**Multi-label CNN Based Pedestrian Attribute Learning for Soft Biometrics** Jianqing Zhu (*Chinese Academy of Sciences, China*), Shengcai Liao (*Chinese Academy of Sciences, China*), Dong Yi (*Chinese Academy of Sciences, China*), Zhen Lei (*Chinese Academy of Sciences, China*), and Stan Z. Li (*Chinese Academy of Sciences, China*)
		Closing Ceremony Session Co-Chairs: Massimo Tistarelli (*University of Sassari, Italy*), Yau Wei Yun (*Institute for Infocomm Research, Singapore*), and Vutipong Areekul (*Kasetsart University, Thailand*)

Hotel Merlin Beach Resort Map

General Chairs

Massimo Tistarelli - University of Sassari, Italy
Wei-Yun Yau - Institute for Infocomm Research (I²R), Singapore
Vutipong Areekul - Kasetsart University, Thailand

Program Chairs

Vijayakumar Bhagavatula - Carnegie Mellon University, USA
Mark S. Nixon - University of Southampton, UK
Stan Z. Li - Chinese Academy of Sciences, China

Publications Chairs

Kar-Ann Toh - Yonsei University, Korea
Michele Nappi - University of Salerno, Italy

Doctoral Consortium Chairs

Bernadette Dorizzi - Télécom SudParis (TSP), France
Arun Ross - Michigan State University, USA

Tutorial Chairs

Terrance Boult - University of Colorado at Colorado Springs, USA
Karthik Nandakumar - IBM Research Collaboratory, Singapore

Advisory Board

Rama Chellappa - University of Maryland, USA
Josef Kittler - University of Surrey, UK
Javier Ortega-Garcia - Universidad Autónoma de Madrid, Spain
Jaihie Kim - Yonsei University, Korea
Seong-Whan Lee - Korea University, Korea Sudeep Sarkar University of South Florida, USA
Sudeep Sarkar - University of South Florida, USA

Government Track Chairs

Jonathon Phillips - NIST, USA
Pratit Santiprabhob - Assumption University, Thailand

Honorary Chairs

Anil K. Jain - Michigan State University, USA
Tieniu Tan - Institute of Automation, Chinese Academy of Sciences, China

Sponsorship Chairs

Salil Prabhakar - Delta ID Inc., USA
Yoichi Seto - Advanced Institute of Industrial Technology, Japan
Emilio Mordini - The Centre for Science, Society and Citizenship, Italy

Industry /Demo Track Chairs

Venu Govindaraju - University at Buffalo, SUNY, USA
Brian Lovell - The University of Queensland, Australia

Competition Chairs

Raffaele Cappelli - University of Bologna, Italy
Zhenan Sun - Chinese Academy of Sciences, China

Publicity Chairs

Davide Maltoni - University of Bologna, Italy
Ajay Kumar - The Hong Kong Polytechnic University, Hong Kong
Eliza Du - Indiana University-Purdue University Indianapolis, USA

Local Organizing Committee

Ukrit Watchareeruetai - Local Public Relations Chair, King Mongkut's Institute of Technology Ladkrabang, Thailand
Phunsak Thiennviboon - Local Publications Chair, Kasetsart University, Thailand
Woradorn Wattanapanitch - Local Finance Chair, Kasetsart University, Thailand

Local Staffs from Kasetsart University

Arucha Rungchokanun - Web Administrator
Kittipol Horapong - Publication Assistant
Krisada Phromsuthirak - Finance Assistant
Phumpat Ruangsakul - Artwork Designer
Watcharapong Chaidee - Local Staff
Chonlatid Deerada - Local Staff
Phuchitsan Chaisuk - Local Staff
Natsupa Taengnoi - Local Staff

Program Committee

Face

Xudong Jiang - Nanyang Technological University, Singapore
Ioannis A. Kakadiaris - University of Houston, USA
Zhen Lei - National Laboratory of Pattern Recognition, China
Harry Wechsler - George Mason University, USA

Fingerprint and Hand

Raffaele Cappelli - University of Bologna, Italy
Jianjiang Feng - Tsinghua University, China
Lei Zhang, - The Hong Kong Polytechnic University, Hong Kong

Iris and Ocular

Marios Savvides - Carnegie Mellon University, USA
Zhenan Sun - Chinese Academy of Sciences, China
Mayank Vatsa - Indraprastha Institute of Information Technology, India

Voice

Nicholas Evans - EURECOM, France
Haizhou Li - Institute for Infocomm Research (I²R), Singapore

Gait and Soft Biometrics

Guodong Guo, West Virginia University, USA
Abdenour Hadid, University of Oulu, Finland

Other Biometrics and Fusion

Thirimachos Bourlai - West Virginia University, USA
Chang-Tsun Li - University of Warwick, UK
Norman Poh - University of Surrey, UK

Anti-Spoofing and Security

Karthik Nandakumar - IBM Research Collaboratory, Singapore
Shantanu Rane - Palo Alto Research Center, USA

Biometric Evaluation

Brendan F. Klare - Noblis, USA
Jiwen Lu - Advanced Digital Sciences Center, Singapore

Systems and Standards

Raul Sanchez-Reillo - University Carlos III of Madrid, Spain
Walter Scheirer - Harvard University, USA

Biometric Applications

Christophe Champod - University of Lausanne, Switzerland
Didier Meuwly - University of Twente, Netherlands

Reviewers

Lale Akarun
Zahid Akhtar
J. Alba-Castro
Fernando Alonso-Fernandez
Andre Anjos
Vutipong Areekul
Kiran Balagani
George Bebis
Abhijit Bendale
J. Beveridge
Chandrasekhar Bhagavatula
Vijayakumar Bhagavatula
Samarth Bharadwaj
Himanshu Bhatt
Vishnu Naresh Boddeti
David Bolme
Terry Boult
Thirimachos Bourlai
Kevin Bowyer
Julien Bringer
Christoph Busch
John Bustard
Patrizio Campisi
Raffaele Cappelli
John Carter
Christophe Champod
Chi-Ho Chan
Vinod Chandran
Rama Chellappa
Xilin Chen
Fanglin Chen
Jie Chen
Liming Chen
Li Cheng
Ivana Chingovska
Stelvio Cimato
Naser Damer
Antitza Dantcheva
Mohamed Daoudi
John Daugman
Larry Davis
Maria De Marsico
Fernando Dela Torre
Farzin Deravi
Tejas Dhamecha
Jana Dittmann
Bernadette Dorizzi
Andrzej Drygajlo
Nicholas Evans
Marcos Faundez-Zanuy
Jianjiang Feng
Miguel Ferrer-Ballester
Julian Fierrez
Gregory Fiumara
Patrick Flynn
Clinton Fookes
Javier Galbally
Marta Gomez-Barrero

Manuel Francisco Gonzalez Penedo
Gaurav Goswami
Venu Govindaraju
Patrick Grother
Manuel Guenther
Zhenhua Guo
Guodong Guo
Dong Guo
Abdenour Hadid
Hu Han
Xiaofei He
Javier Hernando
Jiankun Hu
Masatsugu Ichino
Anil Jain
Hongjun Jia
Raghavender Jillela
Jinyu Jinyu
Ioannis Kakadiaris
Behrooz Kamgar-Parsi
Vivek Kanhangad
Elie Khoury
Hamed Kiani
Jaihie Kim
Josef Kittler
Oleg Komogortsev
Adams Kong
Ajay Kumar
Jianhuang Lai
Sang Youn Lee
L Leng
Jun Li
Chang-Tsun Li
Guoqiang Li
Shengcai Liao
Manhua Liu
Eryun Liu
Brian Lovell
Guangming Lu
Simon Lucey
Davide Maltoni
Bappaditya Mandal
Emanuela Marasco
Sebastien Marcel
Brian Martin
Roy Maxion
Aythami Morales
Loris Nanni
Michele Nappi
Hossein Nejati
Mahesan Niranjan
Mark Nixon
Afzel Noore
Javier Ortega-Garcia
Joseph O'Sullivan
Sharath Pankanti
Unsang Park
Andreas Pashalidis
Vishal Patel

Jonathon Phillips
Matti Pietikainen
Jaishanker Pillai
Utsav Prabhu
S. R. M. Prasanna
Hugo Proenca
Qijun Qijun Zhao
Raghavendra Ramachandra
Daniel Ramos
Shantanu Rane
Christian Rathgeb
Ajita Rattani
Fabio Roli
Bakhtiar Affendi Rosdi
Arun Ross
Albert Salah
Raul Sanchez-Reillo
Anil Sao
Marios Savvides
Walter Scheirer
Natalia Schmid
Stephanie Schuckers
Fabio Scotti
Keshav Seshadri
Shishir Shah
Xudong Shi
Stephen Siena
Terence Sim
Koen Simoens
Richa Singh
Jonathon Smereka
Ctirad Sousedik
Luuk Spreeuwers
Zhenan Sun
Elham Tabassi
Benjamin Tams
Connie Tee
Andrew Beng Jin Teoh
Jie Tian
Massimo Tistarelli
Tardi Tjahjadi
Kar-Ann Toh
Pedro Tome
Mayank Vatsa
Raymond Veldhuis
Shreyas Venugopalan
Ruben Vera-Rodriguez
Jiang Gang Wang
Harry Wechsler
Yongkang Wong
Damon Woodard
Dong Xu
Yasushi Yagi
Wenming Yang
Dong Yi
Soweon Yoon
Lei Zhang
Lin Zhang
Weishi Zheng

Kasetsart University aims to create knowledges of the land for the well-being of nation.

Kasetsart University Philosophy

Kasetsart University devotes itself to the task of accumulating and developing intellectual knowledge. It thrives for the growth in academic wisdom including ethical and moral excellence. In addition, it has a responsibility to play a leading role in keeping our Thai heritage alive and to ensure that it continues to grow to enrich the civilization of the nation.

Faculty of Engineering Philosophy

To produce high-caliber graduates through advanced technology and institutional self-dependence.

SIEW-SNGIEM AWARD

In Loving Memory and Gratitude to Siew and Sngiem Karnchanachari of Thailand

Supported By

Maevadi Karnchanachari Navapan

Dr. Karnitha Karnchanachari

Phornsake Karnchanachari

Objectives

1. Promote multiple disciplinary team building and networking.

2. Promote social responsibility and non-government sector participation.

It is important to be an active and effective member of the community. Strengthening human resource and leadership development is critical and desirable.

Platinum Sponsor

SIEW-SNGIEM AWARD

Gold Sponsors

Kasetsart University
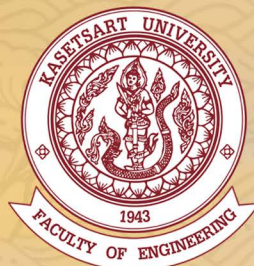
CHANWANICH

Silver Sponsors

ST Electronics
A company of ST Engineering

SAFRAN
Morpho

Supporting Organizations

Ministry of Justice