JCSSE 20th Anniversary

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THE BOOKLET OF JCSSE 2023

The 20th International Joint Conference on Computer Science and Software Engineering

28th June - 1st July 2023

Naresuan University Phitsanulok, Thailand

ธนาคารกรุงไทย KRUNGTHAI BANK

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Message from General Chair

Dear colleagues, friends and students**.** Welcome to the 20th JCSSE 2023. A very small domestic conference organized by the collaborative research network (CRN) in computer science with the financial support from the former Ministry of High Education of Thailand emerged about two decades ago and later became JCSSE. This conference has been consistently and strongly progressed in terms of academic quality, rank, and international recognition. This year, JCSSE organized by the Department of Computer Science and Information Technology at Naresuan University, Thailand has reached a very significant milestone in collaborative research among all 20 major universities in Thailand. We have been honored by the following keynote speakers, which we deeply feel thankful for their academic talks.

(1) Professor Stefan Poslad from Queen Mary University of London.
(2) Dr. Chanikarn Wongviriyawong, CEO of EATLAB, THAILAND.
(3) Dr. Phitchaya Phothilimthana from Google Brain.

Although the crisis of conflict between two major world power countries seems to continue endlessly, JCSSE 2023 still maintains the quality of accepted papers. The number of submitted manuscripts to JCSSE 2023 from several countries is higher than the last conference. Among 182 submitted manuscripts, only 93 of them were accepted, which is equal to 51.1% acceptance rate. The success and quality of JCSSE 2023 came from the great efforts of the following people, which we would like to thank for their devotion.

(1) Faculty members of the Department of Computer Science and Information Technology, Naresuan University, Thailand.
(2) Organizing committee, technical committee, program chairs, track chairs.
(3) IEEE Thailand section; ECTI Association; Krungthai Bank; Office of the Personal Data Protection Commission; PTT Exploration and Production Public Company Limited.

To commemorate JCSSE's momentous milestone, authors whose papers have the highest acceptance and lifetime citation accomplishments are awarded and recognized. Once again, we extend to you our warmest welcome and sincere appreciation for joining us on this special occasion. May this conference be a source of inspiration, intellectual stimulation, and lasting memories for all of us.

Chidchanok Lursinsap

Department of Mathematics and Computer Science,
Faculty of Science, Chulalongkorn University
General Chair of JCSSE2023

Message from General Chair

It is our great pleasure to welcome you to the 20th International Joint Conference on Computer Science and Software Engineering (JCSSE2023). While this year's conference marks two decades of collaboration, innovation, and knowledge-sharing, we are also extremely enthusiastic about it being the first fully in-person conference in three years due to the pandemic. What a perfect way to celebrate JCSSE's 20th anniversary, with a return to good old face-to-face interaction and networking opportunities!

This year's JCSSE conference will be held from June 28 to July 1, 2023, at the King Naresuan Exhibition and Convention Center, Naresuan University, Phitsanulok, Thailand. The organizing committee, in addition to working with the technical program committee and the track chairs to ensure paper quality, has planned several special focus and social programs, and invited speakers from a pool of entrepreneurs and cutting-edge researchers to enhance the attendees' experience.

The JCSSE2023 features three special guests. Stefan Poslad, from Queen Mary University of London, will share his insights on IoT-driven distributed AI. Phitchaya Phothilimthana of Google Brain will highlight her ground-breaking work in neural architecture. And finally, Chanikarn Wongviriyawong of EATLAB will join forces with Phitchaya Phothilimthana for an inaugural WiSE Talk! This special panel discussion aims to present viewpoints from top-level female leaders in both academia and industry about current and future career opportunities, specifically in different sub-fields of software engineering.

The JCSSE2023 Conference launched an initiative for promoting female researchers and leaders' participation in the organization of the conference. In addition to our female distinguish guests, seven of our organizing committee members are female. The number of female track co-chairs has also increased from the previous year. The technical program committee members and track co-chairs were nominated and invited based on geographical balance and continuity considerations and include researchers with experience from past conferences, while also opening the door to new volunteers who have committed to serve in the future. We truly appreciate the support from many researchers all over the world and feel very honored by the enthusiasm expressed by our colleagues in the community.

To commemorate JCSSE's momentous milestone, we are delighted to announce that we will be recognizing distinguished contributors through awards for papers with the highest acceptance and lifetime citation accomplishments. We invite all attendees to join us at the awards reception ceremony and the Gala banquet to follow, on the evening of June 29. We encourage everyone to participate in multidisciplinary conversation, forge new connections, and reminisce about the memorable moments we have shared throughout the years.

None of this would have been possible without the dedication and hard work of countless individuals. We would like to extend our heartfelt gratitude to the organizing committee, technical committee, program chairs, track chairs, reviewers, and volunteers who have selflessly devoted their time and expertise to curate a truly exceptional conference experience. We would also like to express our appreciation to the sponsors and partners, whose support has been instrumental in making this event a resounding success.

Together, let us leverage this anniversary celebration as a catalyst for further advancements, transformative breakthroughs, and an even brighter future for computer science and software engineering.

Once again, we extend to you our warmest welcome and sincere appreciation for joining us on this special occasion. May this conference be a source of inspiration, intellectual stimulation, and lasting memories for all of us.

Sarintip Tantanee
President of Naresuan University, Thailand
General Chair of JCSSE2023

Message from Technical Program Chairs

On behalf of the Department of Computer Science and Information Technology (CSIT), Faculty of Science, Naresuan University, we would like to welcome you to Phitsanulok, Thailand!

We are honored to be the host of this year's International Joint Conference on Computer Science and Software Engineering (JCSSE2023) which marks its 20th anniversary. The CSIT Department is proud to be a part of this rich tradition that serves as a central forum for leading scientists and engineers to present and exchange advancements in computer science, software engineering, and related fields. With esteemed keynote speakers and high-quality research presentations, JCSSE attracts experts from around the world to our beloved country, facilitating the promotion, sharing, and discussion of various issues and developments in the fields.

This year, the JCSSE2023Technical Program Committee accepts 93 papers out of 182 submissions. Out of these submissions, we have more than 500 world-wide researchers and scientists listed authors. The beautiful diversity of our conference can be seen in Fig. 1.

Fig. 1. Authors by country as listed in submitted papers

JCSSE2023 offers an invaluable opportunity for young researchers to showcase their talents and present intriguing research ideas ranging in various topics, as shown in Fig. 2.

To celebrate the 20th anniversary of JCSSE, the organizing committee has arranged a three-day event-pack schedule for our attendees. We will start off with a workshop to discover the RISC-V architecture on June 28 followed by a banquet for the steering committee.

Our technical program starts on June 29. We are honored to have Stefan Poslad, from Queen Mary University of London and Phitchaya Phothilimthana of Google Brain to be our keynote speakers. This year, we also launched a panel discussion called "WiSE Talk!" to celebrate women in the field of software engineering. The fourteen parallel sessions in the afternoon will be a great opportunity for the participants to exchange knowledge and foster collaboration. Everyone is then invited to join us at the reception ceremony where the winners of the best paper and the best presentation awards will be announced. The organizing committee will also be honoring distinguished contributor throughout the decade with these two following awards:

1) *JCSSE 20th Anniversary Most Publications Award* to Peerapon Vateekul who has published 17 papers in JCSSE since 2011; and
2) *JCSSE 20th Anniversary Most Citations Award* to Orasa Patsadu, Chakarida Nukoolkit, and Bunthit Watanapa for their work on "Human Gesture Recognition using Kinect Camera" 2012 the 9th International Conference on Computer Science and Software Engineering (JCSSE), which was cited by 136 papers.

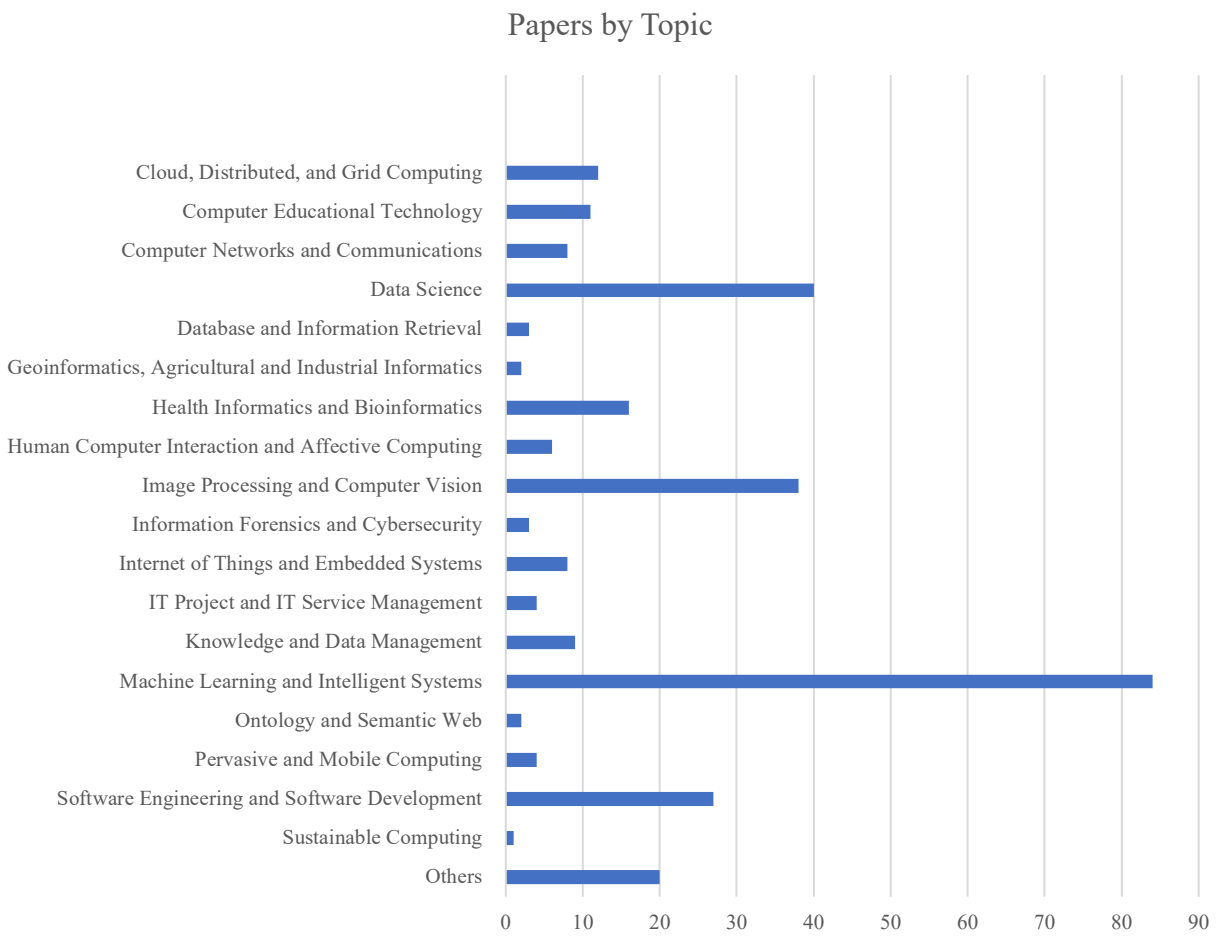

Fig. 2. Topics of accepted papers

On the last day of the conference, we welcome you all on a special day trip and enjoy the nature, arts, and culture that Phitsanulok and Phetchabun have to offer.

We have been working tirelessly to create this memorable conference experience for you. Please let us know if you have any comments or suggestions. Thanks again for being part of our JCSSE2023.

Technical Program Chairs of JCSSE 2023

JCSSE 2023 Track Chairs

Special Session: Data Governance and Data Protection

Chair: Sotarat Thammaboosadee (Mahidol University, Thailand)

Special Session: Global Emerging Technology(Blockchain, Metaverse, and Beyond)

Chair: Sanpawat Kantabutra (Chiang Mai University, Thailand)

Special Session: Natural Language Processing for a Better Life

Chair: Prachya Boonkwan (National Electronics and Computer Technology Center, Thailand)

Special Session: Quantum Computing and Algorithms

Chair: Thawatchai Chomsiri (Mahasarakham University, Thailand)

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Tanatorn Tanantong (Thammasat University, Thailand)
Rawesak Tanawongsuwan (Mahidol, Thailand)
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Sotarat Thammaboosadee (Mahidol University, Thailand)
Thanawut Thanavanich (Chiang Rai Rajabhat University, Thailand)
Kwanchiva Thangthai (National Electronics and Computer Technology Center, Thailand)
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KEYNOTE - THURSDAY, JUNE 29, 2023

In an Age of Many Successful Big Data AI Model Rollouts & Apps – Is There Still a Case for Utilising Small Data-driven and Distributed AI?

Stefan Poslad

School of Electronic Engineering and Computer Science
Queen Mary University of London, United Kingdom

Synopsis

The current dominant trend for AI is for a small number of organisations, either industrial, institutional or national, but seldom citizen-driven ones, to amass big data, and to apply increasingly sophisticated (e.g., deep machine learning) AI algorithms, executed in centralised (cloud-based) high computation resources, to solve real world problems that are more general, hence, the term AG(=General)I. And yes, some problems are able to be solved better this way, but is this the most suitable way to solve the many outstanding critical environmental & human societal issues? In this talk, some reflections will be offered to counter and complement the current dominant (big data, deep) AI model trend. This includes a discussion of the multi-dimensional aspects of human/animal/plant intelligence that so far still surpass current AGI, the motivation for distributed, small data (Io)-driven) AI, a discussion of some models & applications to enable this, and a future outlook.

Keynote Speaker Biography

Stefan Poslad leads the Internet of Things (IoT), more specifically the IoT2US (Internet of Things to Ubiquitous, Computer, Science) Lab at Queen Mary University of London, where he is a fellow of the Digital Environment Research Institute (DERI), and Cognitive Science research group. He is a fellow of the UK AI Alan Turing Institute and is regarded by Stanford University as being in the top 2% of scientists worldwide. His current research and innovation focus is AI-driven, data science-driven and geoscience-driven models, to enhance how we physically sense and analyse human location and motion behavior shifts, and physical environment changes, both outdoors and indoors. He has been the lead researcher for QMUL in over 15 international collaborative projects with industry. He is the sole author of a leading book on Ubiquitous Computing: Smart Devices, Environments and Interaction that has over 1000 research citations that are in use for teaching by over 70 institutes worldwide, across six continents.

KEYNOTE - THURSDAY, JUNE 29, 2023

Machine Learning for Machine Learning Compilers at Google

Phitchaya Phothilimthana

Research Scientist
Google Brain

Synopsis

Search-based techniques have been demonstrated effective in solving complex optimization problems that arise in domain-specific compilers for machine learning (ML). Unfortunately, deploying such techniques in production compilers is impeded by several limitations. In this talk, I will present an autotuner for production ML compilers that can tune both graph-level and subgraph-level optimizations at multiple compilation stages. We demonstrate how to incorporate machine learning techniques such as a learned cost model and various learning-based search strategies to reduce autotuning time. Our learned cost model has high accuracy and outperforms a heavily-optimized analytical performance model. In an evaluation across 150 ML training and inference models on Tensor Processing Units (TPUs), the autotuner offers up to 2.4x and an average 5% runtime speedup over the heavily-optimized XLA compiler. I will outline how we deploy the learning-based XLA autotuner at datacenter scale to automatically tune the most heavily-used production models in Google's fleet everyday. The deployed tile size autotuner has been saving approximately 2% of fleetwide TPU compute time.

Keynote Speaker Biography

Phitchaya "Mangpo" Phothilimthana was born and raised in Phitsanulok. Mangpo was the first female student to represent Thailand at IOI,where she received bronze and silver medals in 2006 and 2007 respectively. She received an undergraduate degree in Computer Science from MIT and PhD from UC Berkeley. Mangpo was a recipient of Microsoft Research PhD Fellowship and Qualcomm Innovation Fellowship. She is currently a staff research scientist at Google DeepMind (previously Google Brain), where she leads Machine Learning for Machine Learning Compilers effort (one of Google Brain moonshots in 2020). Her research interests include compilers, machine learning for systems, and computing sustainability.

KEYNOTE - THURSDAY, JUNE 29, 2023

WiSE Talk (Women in Software Engineering)

Chanikarn Wongviriyawong

King Mongkut's University of Technology Thonburi

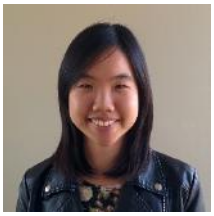
Phitchaya Phothilimthana

Research Scientist
Google Brain

Synopsis

This special panel discussion aims to present viewpoints from top-level female leaders in both academia and industry about current and future career opportunities, specifically in different sub-fields of software engineering.

Keynote Speaker Biography



Phitchaya "Mango" Phothilimthana is a research scientist at Google Brain, where she leads Machine Learning for Machine Learning Compilers effort (one of Google Brain moonshots in 2020). Her research interests include compilers, machine learning for systems, program synthesis, and energy-aware computing. She completed a PhD in Computer Science at UC Berkeley. Her dissertation focuses on synthesis-aided compilation and programming models for emerging architectures, ranging from an ultra-low-power processor to a programmable network card. Phothilimthana was a recipient of Microsoft Research PhD Fellowship and Qualcomm Innovation Fellowship.

Chanikarn "Mint" Wongviriyawong is a founder and CEO of EATLAB, the first spinout from KMUTT to serve leading food and beverage production companies by scientifically measuring consumer response to their new products. She provides consultancy to various agencies about innovation, data analytics, affective and cognitive modeling, and commonsense artificial intelligence. Prior to joining KMUTT, she was a quantitative trader, and co-founded a startup, Matternet, while at Singularity University. Matternet is a drone delivery network now partnering with Mercedes-Benz, and WHO. Wongviriyawong received her academic training in Mechanical Engineering. She graduated a PhD from MIT in Mechanical Engineering with a minor in Political Science, a master's degree from MIT Media Lab, and a bachelor degree from Carnegie Mellon University with double minors in Robotics and Computer Science.

Conference Program

July 28, 2023

9.00 am - 12.00 pm	**JCSSE2023 Registration** JCSSE2023 Registration at Main Hall of KNECC (2nd floor)
1.00 pm - 4.00 pm	**Workshop 1 : "NU4YOU" :RISC-V Hands-On-Workshop at NU(30 persons/class)** -Workshop Detail : CLICK [conducted in English] -Instructor : Paul Sherman, RISC-V International Foundation (USA) -Register Form : Apply -Room : Auditorium 4 (A4)

July 29, 2023

8.00 am - 8.45 am	**JCSSE2023 Registration** Registration at Main Hall of KNECC (2nd floor)
08.45 am - 09.15 am	**Opening Ceremony** Opening Ceremony by Sarintip Tantanee (President of Naresuan University)
09.30 am - 10.30 am	**Keynote** Keynote by Stefan Poslad
10.30 am - 11.15 am	**Keynote** Keynote by Phitchaya Phothilimthana
11.15 am - 12.15 am	**Keynote** Keynote-WiSE talk by Chanikarn Wongviriyawong & Phitchaya Phothilimthana
12.15 am - 13.30 am	**LUNCH**

Parallel Sessions
29 June 2023
Time 13.30-16.30 at Naresuan University

Session 1 (1.30 pm – 4.30 pm): NLP and Machine Learning
Room: Auditorium 2 (A2)
Chair: Marut Buranarach

1:30 pm	Topic Modelling Using Latent Dirichlet Allocation (LDA) and Analysis of Students Sentiments	Ontiretse Ishmael
1:45 pm	Two-Stage Thai Misspelling Correction Based on Pre-Trained Language Models	Idhibhat Pankam, Peerat Limkonchotiwat and Ekapol Chuangsuwanich
2:00 pm	Text Classification Using Improving Term Frequency With Gaussian and Multilayer Perceptron Technique	Vuttichai Vichianchai and Sumonta Kasemvilas
2:15 pm	CannabisO: The Ontology-Based Knowledge Model for Safe Cannabis Consumption in Thailand	Pranpreya Samasutthi and Chutiporn Anutariya

Session 2 (2.30 pm – 3.30 pm): Cloud Computing; Internet of Things; Computer Networks
Room: Auditorium 2 (A2)
Chair: Somchart Fugkeaw

2:30 pm	A Multi-Objective Grouping Genetic Algorithm for Server Consolidation in Cloud Data Centers	Chanipa Sonklin and Kachane Sonklin
2:45 pm	Enhanced Bluetooth With Low-Density Parity-Check Codes	Pawarit Manakul, Usana Tuntoolavest, Kazuhiko Fukawa and La-or Kovavisaruch
3:00 pm	0.01 Cent Per Second: Developing a Cloud-Based Cost-Effective Audio Transcription System for an Online Video Learning Platform	Nut Pinyo, Panya Lokaphadhana, Pipat Saengow, Saenyakorn Siangsanoh, Thanapoom Wonnaparhown, Ekapol Chuangsuwanich, Proadpran Punyabukkana and Atiwong Suchato
3:15 pm	Development of Control-Plane Switch Migration Testbed Using Mininet-WiFi for Software-Defined Vehicular Network	Muhammad Zain Ul Abideen, Aung Myo Htut and Chaodit Aswakul

Session 3 (3.30 pm – 4.30 pm): Cloud, Distributed, IOT, and Computer Networks
Room: Auditorium 2 (A2)
Chair: Somchart Fugkeaw

3:30 pm	Edge Service Placement Optimization for Location-Based Service	Karnkitti Kittikamron, Natthanon Manop, Kultida Rojviboonchai and Adsadawut Chanakitkarnchok
3:45 pm	Using Buses as Edge Nodes in Vehicular Networks	Natthanon Manop, Karnkitti Kittikamron, Kultida Rojviboonchai and Adsadawut Chanakitkarnchok
4:00 pm	Improvement of Message-Oriented Middleware (MOM) for the Surveillance Platform	Seoulcha Ratmumad and Wannarat Suntiamorntut
4:15 pm	A Backup Mechanism of Virtual Machine Checkpoint Image Using ZFS Snapshots	Tinnaphob Angkaprasert and Kasidit Chanchio

Session 4 (1.30 pm – 4.30 pm): Data Governance and Data Protection
Room: Auditorium 5 (A5)
Chair: Sotarat Thammaboosadee

1:30 pm	An Efficiently Revocable Cloud-Based Access Control Using Proxy Re-Encryption and Blockchain	Khanadech Worapaluk and Somchart Fugkeaw
1:45 pm	A Resilient Cloud-Based DDoS Attack Detection and Prevention System	Somchart Fugkeaw, Narongsak Moolkaew, Theerapat Wiwattanapornpanitaction, Thanyathon Saengsenaaction and Pattavee Sanchol
2:00 pm	Cell-Key Perturbation Data Privacy Procedure for Security Operations Center Team	Supornpol Nukrongsin and Chetneti Srisaan
2:15 pm	QUALYST: Data Quality Assessment System for Thailand Open Government Data	Tanapat Samakit, Chutiporn Anutariya and Marut Buranarach
2:30 pm	Design and Implementation of Data Governance Framework and Platform: A Case Study of National Research Organization of Thailand	Sapa Chanyachatchawan, Krich Nasingkun, Patipat Tumsangthong, Porntiwa Chata, Marut Buranarach and Monsak Socharoentum
2:45 pm	Coffee break	
2:55 pm	Data Literacy Framework for Thailand Government Officers	Chaiwat Jirakitpaibool, Sotarat Thammaboosadee and Monsak Socharoentum

3:10 pm	The Comparison of Password Composition Policies Among US, German, and Thailand Samples Jenjira Lomchan, Rungrat Wiangsripanawan and Siamak F. Shahandashti
3:25 pm	A Sensor Fusion Approach for Improving Implementation Speed and Accuracy of RTAB-Map Algorithm Based Indoor 3D Mapping Hoang-Anh Phan, Phuc Vinh Nguyen, Thu Hang Thi Khuat, Hieu Dang Van, Dong Huu Quoc Tran, Bao Lam Dang, Tung Thanh Bui, Van Nguyen Thi Thanh and Trinh Chu Duc
3:40 pm	An Enhanced Sampling-Based Method With Modified Next-Best View Strategy for 2D Autonomous Robot Exploration Dong Huu Quoc Tran, Hoang-Anh Phan, Hieu Dang Van, Tan Van Duong, Tung Thanh Bui and Van Nguyen Thi Thanh
3:55 pm	An Approximation of FOCUSS Mean Squared Error Bamrung Tausiesakul and Krissada Asavaskulkiet
4:10 pm	Midnight: An Efficient Event-Driven EVM Transaction Security Monitoring Approach for Flash Loan Detection Shahin Ramezany, Rachsuda Setthawong and Pisal Setthawong

Session 5 (1.30 pm – 2.30 pm): Internet of Things and Embedded Systems
Room: Auditorium 3 (A3)
Chair: Winai Wongthai

1:30 pm	Effects of Speech Duration on Preserving Identity of Synthesized Voice Papapin Supmee, Klittiya Suwanmalai, Natkrita Hanchoenkul, Napa Sae-Bae and Banphatree Khomkham
1:45 pm	An IoT Intensive AI-Integrated System for Optimized Surface Water Quality Profiling M M Mahbubul Syeed, Md. Rajaul Karim, Md Shakhawat Hossain, Kaniz Fatema, Mohammad Faisal Uddin and Razib Hayat Khan
2:00 pm	Acoustic Monitoring System With AI Threat Detection System for Forest Protection Wansuree Massagram, Bhattarapong Somwong and Kritsana Kumphet
2:15 pm	Development of a Compact System to Recognize 26 Letters in American Sign Language Alphabet Based on Flexible Ionic Liquid Strain Sensors Chi Tran Nhu, Dang Tiep, Phu Nguyen Dang, Van Nguyen Thi Thanh, Cuong Manh Vu and Tung Thanh Bui

Session 6 (2.30 pm – 3.30 pm): Computer Educational Technology
Room: Auditorium 3 (A3)
Chair: Wansuree Massagram

2:30 pm	Office Syndrome Treatment Using Augmented Reality Technology on Mobile Applications	Pattiyaporn Srahongthong and Apichaya Nimkoompai
2:45 pm	What Affects the Adoption of Metaverse in Education? A SEM-Based Approach	Rohani Rohan, Pranab Roy, Vajirasak Vanijja, Suree Funilkul, Subhodeep Mukherjee and Debajyoti Pal
3:00 pm	Enhancing Student Photography Skill With Web-Based Photo Stock and Learning System	Nontawat Thongsibsong, Surapol Vorapatratorn and Kemachart Kemavuthanon
3:15 pm	Studying Cardiac Electrophysiology via EPSSIM	Sujitra Katekarn, Noppadon Sisuk, Teochit Nuamchit, Kanjana Jittiporn and Janjira Payakpate

Session 7 (3.30 pm – 4.30 pm): Computer science (miscellaneous)
Room: Auditorium 3 (A3)
Chair: Wansuree Massagram

3:30 pm	Hybrid Quantum Encoding: Combining Amplitude and Basis Encoding for Enhanced Data Storage and Processing in Quantum Computing	Bhattaraprot Bhabhatsatam and Sucha Smanchat
3:45 pm	Using Consumer-Graded Wearable Devices for Sleep Apnea Pre-Diagnosis: A Survey and Recommendations	Chanphot Wongtaweesup, Kristina Thapa, Chutiporn Anutariya, Aekavute Sujarae and James Tisyakorn
4:00 pm	Steganography With Adaptable Separate Encrypted Code of Hidden Confidential Information	Kudakwashe Vhito and Varin Chouvatut
4:15 pm	Development of a Novel Quality Control Indicator for Coffee Roasting Based on the Digitalization of Smell by a Portable Electronic Nose	Varanya Somaudon

Session 8 (1.30 pm – 4.30 pm): Health Informatics, Bioinformatics, and Software Engineering

Room: Auditorium 6 (A6)

Chair: Chakkrit Snae Namahoot

1:30 pm	Whole-Exome Sequencing (WES) Analysis for ABO Subgroups Identification Sutthiphan Prananpaeng, Thiradon Thaiyanto, Ratsameetip Wita and Nampeung Anukul
1:45 pm	Classifying Activities of Electrical Line Workers Based on Deep Learning Approaches Using Wrist-Worn Sensor Sakorn Mekruksavanich and Anuchit Jitpattanakul
2:00 pm	An Evaluation of Hospital Accreditation From the Survey With Text Vector Analysis Techniques Dittaphong Prapunwattana, Aurawan Imsombut, Picha Suwannahitatorn and Thammakorn Saethang
2:15 pm	Analysis of the 5Rs in Thailand Medication Error Classification Through Natural Language Processing Peachyasitt Udomnuchaisup, Aurawan Imsombut, Picha Suwannahitatorn and Thammakorn Saethang
2:30 pm	Design and Evaluating a Method Using Project Corpus for Inferring Software Description Kohei Terakawa, Sinan Chen and Masahide Nakamura
2:45 pm	Procedural Content Generation of Super Mario Levels Considering Natural Connection SangGyu Nam, Chu-Hsuan Hsueh and Kokolo Ikeda
3:00 pm	Coffee break
3:10 pm	Enhance Machine Learning-Based Code Smell Detection Through Hyper-Parameter Optimization Peeradon Sukkasem and Chitsutha Soomlek
3:25 pm	Performance Improvement on a Learning Assessment Web Application Using AWS DynamoDB as a Cache Database Sirawit Tantiphuwanart, Nuengwong Tuaycharoen, Dittaya Wanvarie, Naruemon Pratanwanich and Atiwong Suchato
3:40 pm	Automated API Testing With Karate Framework: A Case Study of an Online Assessment Web Application Supagid Gidvarowart, Atiwong Suchato, Dittaya Wanvarie, Naruemon Pratanwanich and Nuengwong Tuaycharoen
3:55 pm	A Practical Usability Study Framework Using the SUS and the Affinity Diagram: A Case Study on the Revised Online Roadshow Website Meng-Chew Leow, Lee-Yeng Ong and Jian-Yu Tan
4:10 pm	Static Class-Level Approach for Test Impact Analysis Alon Basin, Arthorn Luangsodsai and Krung Sinapiromsaran
4:25 pm	ERP Odoo Based Medical Reimbursement System Using Scrum Method (Study Case: Group of Retail and Publishing Kompas Gramedia) SirBernardus Gery Santoso, Fenina Adline Twince Tobing and Adhi Kusnadi

Session 9 (1.30 pm – 4.30 pm): Image Processing, Computer Vision, and Machine Learning

Room: Auditorium 7 (A7)

Chair: Olarik Surinta

1:30 pm	Solving Non-IID in Federated Learning for Image Classification Using GANs	Thiti Chuenbubpha, Thapana Boonchoo, Jason Haga and Prapaporn Rattanatamrong
1:45 pm	Enhancing Brain Tumor Detection With Gradient-Weighted Class Activation Mapping and Deep Learning Techniques	Kornprom Pikulkaew
2:00 pm	SmartPoultry: Early Detection of Poultry Disease From Smartphone Captured Fecal Image	Md Shakhawat Hossain, Sadia Salsabil Tasbira, M M Mahbubul Syeed, Md Mahmudur Rahman, Kaniz Fatema and Mohammad Faisal Uddin
2:15 pm	Real-Time Driver Drowsiness Alert System for Product Distributing Businesses in Phuket Using Android Devices	Amonrat Prasitsupparote, Pakorn Pasitsuparoad and Sirathee Itsarapongpukdee
2:30 pm	Modified Feature Extraction to Apply PSO for Solving Handwritten Digits	Jiraphat Samleepant and Chiabwoot Ratanavilisagul
2:45 pm	Combining AI and Non-AI for a Smooth User Experience	Thanakij Wanavit, Mario Quintana, Samuel Sallee and Leslie Klieb
3:00 pm	Coffee break	
3:10 pm	Multi-Task Learning Frameworks to Classify Food and Estimate Weight From a Single Image	Pakin Siwatammarat, Panas Jesadaporn and Jakarin Chawachat
3:25 pm	A Web Platform for Measuring Frog Size and Counting via Contour Detection and Image Segmentation	Worawit Fankam-ai, Panyakorn Rintha, Thanakorn Inthajak, Sirilux Kaewsirirung, Nongnuch Ketui and Kanitha Homjun
3:40 pm	Improved Heart Rate Estimation From Facial Videos Using Hair Detection and Majority Vote in Subintervals	Panupong Sunkom, Denchai Worasawate, Chadchai Srisurangkul and Minoru Nakayama
3:55 pm	Machine Learning Approaches for Quality Control in Pulp Packaging Manufacturers	Rattana Ceesay, Thapana Boonchoo and Prapaporn Rattanatamrong
4:10 pm	Recognizing Fall Risk Factors With Convolutional Neural Network	Siam Yamsaengsung, Sittichai Sukreep, Thanapong Khajontantichaikun, Piyapat Dajpratham, Saichon Jaiyen, Pornchai Mongkolnam, Chakarida Nukoolkit and Vithida Chongsuphajaisiddhi

Session 10 (1.30 pm – 4.30 pm): Image Processing, Computer Vision, and Machine Learning
Room: Auditorium 8 (A8)
Chair: Pisal Setthawong

1:30 pm	Weighting Histogram of Oriented Gradients for Spondylolisthesis Classification From X-Ray Images	Sittisak Saechueng and Ungsumalee Suttapakti
1:45 pm	Comparison of CNN Models for Urban Garbage Image Classification in Thailand	Tanasit Tuangcharoentip and Nattee Niparnan
2:00 pm	Design and Stability Guarantee of Variable Center-Frequency Bandpass Filters	Tian-Bo Deng
2:15 pm	CCE-Stream: Semi-Supervised Stream Clustering Using Color-Based Constraints	Kritsana Treechalong
2:30 pm	Sentiment Analysis of Consumer Reviews Using Machine Learning Approach	Rizwanul Islam Rudra and Anilkumar Kothalil Gopalakrishnan
2:45 pm	Coffee break	
2:55 pm	A Comparison of Machine Learning and Neural Network Algorithms for an Automated Thai Essay Scoring	Suttichai Suriyasat, Nuengwong Tuaycharoen and Sapa Chanyachatchawan
3:10 pm	Effects of Genetic Operators on Neural Architecture Search Using Multi-Objective Genetic Algorithm	Yutana Jewajinda, Praiwan Patcharabumrung and Kata Praditwong
3:25 pm	A Comparative Study of LSTM, GRU, BiLSTM and BiGRU to Predict Dissolved Oxygen	Narongsak Putpuek
3:40 pm	A Comparative Study on Out of Scope Detection for Chest X-Ray Images	Nuttapol Kamolkunasiri, Proadpran Punyabukkana and Ekapol Chuangsuwanich
3:55 pm	A Weakly-Supervised Glass Bottle Defect Detection System Based on Multi-View Analysis	Nalina Phisanbut, Punpiti Piamsa-nga and Lutfee Phalawan
4:10 pm	Few-Shot Law Retrieval System for Supreme Court Cases	Thaweesak Chusri, Sadanan Arsaibun, Peerapat Chokesuwattanaskul, Ekapol Chuangsuwanich and Attapol T Rutherford

Session 11 (1.30 pm – 4.30 pm): Machine Learning and Intelligent Systems
Room: Auditorium 9 (A9)
Chair: Rachsuda Setthawong

1:30 pm	Customer Churn Prediction Using Weight Average Ensemble Machine Learning Model	I Nyoman Mahayasa Adiputra and Paweena Wanchai
1:45 pm	Contextualized vs. Static Word Embeddings for Word-Based Analysis of Opposing Opinion	Wassakorn Sarakul and Attapol T Rutherford
2:00 pm	Machine Learning Models for Condominium Appraisal With Result Tuning	Sahassawat Posungnern, Sansiri Tanachutiwat, Thanit Anchaleechamaikorn and Taninnuch Lamjiak
2:15 pm	A Study of Using GPT-3 to Generate a Thai Sentiment Analysis of COVID-19 Tweets Dataset	Patthamanan Isaranontakul and Worapoj Kreesuradej
2:30 pm	Iteratively Reweighted Least Squares by Diagonal Regularization	Bamrung Tausiesakul and Krissada Asavaskulkiet
2:45 pm	Coffee break	
2:55 pm	A Novel Classification Layer Technique for ASL Analysis Using CNN	Kittasil Silanon and Noppon Lertchuwongsa
3:10 pm	Seagrass Classification Using Differentiable Architecture Search	Mark Anthony A Ozaeta, Arnel C. Fajardo, Felimon Jr P Brazas and Jed Allan M Cantal
3:25 pm	Predicting Abundance of Fish Species Production in Manila Bay, Philippines Based on Ensemble Learning Approach	Sherrlyn M. Rasdas, Arnel C. Fajardo and Jomel S Limbago
3:40 pm	Player Optimal Positioning Analysis Using FIFA Video Game Data and Classification Models	Sifat Tanvir and Tasmia Shakerin
3:55 pm	Explainable AI for Systematic Detection of Potential Problems in Natural Language Datasets	Aphinan Peerachaidacho, Nairat Kanyamee and Pinyo Taeprasartsit
4:10 pm	Survey and Analysis of NFT and Blockchain Technologies for Developing Agricultural Product Trading Systems	Suwichai Phunsa, Preecha Noiumkar and Tawatchai Chomsiri
4:25 pm	Price Trend Forecasting of Cryptocurrency Using Multiple Technical Indicators and SHAP	Pongsathorn Pichaiyuth, Puwa Termnuphan, Tuul Triyason, Olarn Rojanapornpun and Saichon Jaiyen

Session 12 (1.30 pm – 4.30 pm): Machine Learning and Intelligent Systems
Room: Auditorium 4 (A4)
Chair: Panyanat Aonpong

1:30 pm	Analysis of the Trade-Off in Data Quality Management for Crowdsourcing Krit Gangwanpongpun, Proadpran Punyabukkana and Ekapol Chuangsuwanich
1:45 pm	Classification Grading of Nam Dok Mai See-Thong Mango by Deep Learning and Transfer Learning Pomboon Pomboonmee, Pongsakron Mungmor, Papitchaya Praha, Poommipat Lonlua and Sanya Khruahong
2:00 pm	BLUR & TRACK: Real-Time Face Detection With Immediate Blurring and Efficient Tracking Tanakrit Jaichuen, Nanthaphop Ren, Pichai Wongapinya and Somchart Fugkeaw
2:15 pm	Sleep Behavior Classification Based on Clusters of Sleep Quality Pawonrat Khumngoen and Sukree Sinthupinyo

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