## Final Program

# The 23rd IEEE/ACIS International Conference on Software Engineering Research, Management and Applications (SERA 2025)


**May 29-31, 2025, Las Vegas, Nevada, U.S.A.**
**Advanced Engineering Building (AEB) at UNLV**
**https://acisinternational.org/conferences/sera-2025/**

# Conference Organizing Committee Members

**General Chair**

| | |
|---|---|
| Ju-Yeon Jo | University of Nevada, Las Vegas |

**Conference Chair**

| | |
|---|---|
| Yeong-Tae Song | Towson University |

**Program Co-Chairs**

| | |
|---|---|
| Mingon Kang | University of Nevada, Las Vegas |
| Junghwan "John" Rhee | University of Central Oklahoma |

**Special Session Chairs**

| | |
|---|---|
| Amel Fraisse | University of Lille, France |
| Jongyeop Kim | Georgia Southern University |
| Takaaki Goto | Toyo University |

**Publicity Co-Chairs**

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|---|---|
| Sai Chandra Kosaraju | California State Polytechnic University, Pomona |
| Amel Fraisse | University of Lille, France |
| Fei Zuo | University of Central Oklahoma |
| Goutam Mylavarapu | University of Central Oklahoma |
| Kristin Schuller | Towson University |

**Program at a Glance**

**Venue: Advanced Engineering Building (AEB) at the University of Nevada Las Vegas**

**Day 1 - Thursday, May 29, 2025**

<table>
<tr><th rowspan="2">Time (PST)</th><th rowspan="2">Activity</th><th colspan="2">Concurrent Sessions</th></tr>
<tr><th>Room 1 (AEB 140/145)</th><th>Room 2 (AEB 150)</th></tr>
<tr><td>8:00 –10:30 AM</td><td colspan="3">Registration</td></tr>
<tr><td>9:00 - 9:20 AM</td><td>Opening Ceremony – Dr. Rama Venkat</td><td colspan="2" rowspan="2">Plenary Session (AEB Flexatorium)</td></tr>
<tr><td>9:20 – 10:30 AM</td><td>Keynote – Dr. Lawrence Chung</td></tr>
<tr><td>10:30 – 11:00 AM</td><td colspan="3">Coffee Break</td></tr>
<tr><td>11:00AM – 12:00 PM</td><td>Sessions</td><td>A1: Applications I</td><td>B1: Digital Twins</td></tr>
<tr><td>12:00 – 2:00 PM</td><td colspan="3">Luncheon (on your own)</td></tr>
<tr><td>2:00 – 3:20 PM</td><td>Sessions</td><td>A2: Software Engineering I</td><td>B2: Methods I</td></tr>
<tr><td>3:20 - 3:50 PM</td><td colspan="3">Coffee Break</td></tr>
<tr><td>3:50 – 5:30 PM</td><td>Sessions</td><td>A3: Applications II</td><td>B3: Healthcare I</td></tr>
<tr><td>6:20 - 8:00 PM</td><td colspan="3">Dinner Banquet (provided by conference)</td></tr>
</table>

**Day 2 - Friday, May 30, 2025**

| Time (EST) | Activity | Concurrent Sessions | |
|---|---|---|---|
| | | Room 1 | Room 2 |
| 8:00 –10:30 AM | Registration | | |
| 9:00 – 10:30 AM | Sessions | A4: Special Session 1: Artificial Intelligence for Health Literacy Transformation (AIHLT 2025) | B4: Special Session 2: Transformative Technologies: Big Data, Machine Learning, Cybersecurity, and Blockchain for the Next Era of Digital Innovation |
| 10:30 – 11:00 AM | Coffee Break / Posters | | |
| 11:00 AM – 12:00 PM | Sessions | A5: Software Engineering II | B5: Special Session 2 |
| 12:00 – 2:00 PM | Luncheon (provided by conference) | | |
| 2:00 – 3:20 PM | Sessions | A6: Software Engineering III | B6: Applications III |
| 3:20 - 3:50 PM | Coffee Break / Posters | | |
| 3:50 – 5:30 PM | Sessions | A7: Education I | B7: Security I |

**Day 3 - Saturday, May 31, 2025**

| Time (EST) | Activity | Concurrent Sessions | |
|---|---|---|---|
| | | Room 1 | Room 2 |
| 9:00 – 10:30 AM | Sessions | A8: Methods II | B8: Healthcare II |
| 10:30 – 11:00 AM | Coffee Break | | |
| 11:00 AM – 12:00 PM | Sessions | A9: Systems | B9: Special Session 3: Intelligent System and Software: Theory and Application |
| 12:00 – 12:05 PM | Closing Remark | | |
| 1:00 - 5:00 PM | Conference Organization Committee Meeting (This event is only for conference organizers) | | |

**Keynote**

# Exploring Use of Generative AI for Representing and Reasoning with Non-Functional Requirements

Dr. Lawrence Chung
Email: chung@utdallas.edu

Faculty of Computer Science-Software Engineering, University of Texas, USA

**Abstract**

Non-functional requirements (NFRs), such as usability, safety, security, and the like, describe how well the software system should do what it's intended to do functionally, and, as such, should be addressed well. However, addressing NFRs well is not easy. In this talk, I will explore using Generative AI for facilitating representation and reasoning with NFRs, at a time when interest in utilizing Machine Leaning/Generative AI seems to be spreading like a wildfire in many industries and research areas. Unsurprisingly, software engineering more broadly, and requirements engineering more specifically, seems no exception to this. After discussing a problem-driven, ontology-based approach to question (prompt) engineering, I will briefly describe some critical challenges going forward at the end.

**Biography**

Lawrence Chung has been working in Requirements Engineering, System/Software Architecture and Systems Engineering. He was the principal author of the research monograph Non-Functional Requirements in Software Engineering, and also has been involved in developing RE-Tools (a muiti-notational requirements engineering tool). A paper he co-authored on NFRs has been selected this year by the IEEE Transactions on Software Engineering (TSE) editorial board as one of the most influential in its 50-year anniversary celebration. He has been a co-editor-in-chief for International Journal of Innovative Software (IJIS) and International Journal of Big Data Intelligence and Applications (IJBDIA), associate editor for Requirements Engineering Journal (REJ) and editorial board member for International Journal of Networked and Distributed Computing (IJNDC), and editor for ETRI Journal (ETRIJ). He is currently on the faculty of Computer Science-Software Engineering at University of Texas at Dallas. He received his Ph.D. in Computer Science in 1993 from University of Toronto.

# Program in Detail

**Day 1 - Thursday, May 29, 2025**

**8:00 – 10:30 AM – Registration** **Lobby**

**9:00 – 9:20 AM – Opening Ceremony – Dr. Rama Venkat** **Flexatorium**

**9:20 – 10:30 AM – Keynote – Dr. Wuwei Shen** **Flexatorium**

**10:30 – 11:00 AM – Coffee Break** **Lobby**

**11:00 AM – 12:00 PM – Application I** **AEB 140/145**
**Chair: TBA**

Evaluating BiLSTM and CNN+GRU Approaches for Human Activity Recognition Using WiFi CSI Data
*Almustapha Wakili, Babajide Asaju and Woosub Jung*

Analyzing Social Media Engagement of Computer Science Conferences
*Rey Ortiz, Sharif Ahmed, Priscilla Salas and Nasir Eisty*

Immersive Virtual Reality Data Visualization for Urban Parking Management
*Takafumi Nakanishi*

**11:00 AM – 12:00 PM – Digital Twins** **AEB 150**
**Chair: TBA**

Emergency Assistive Mobile Application with Digital Twin for Real-Time 3D Navigation in Indoor Environments
*Andrew Summitt, Bhoj Raj Bhatt and Sharad Sharma*

Digital Twins in Education Applications, Challenges, and Future Directions
*Samia Alghamdi and Yeong-Tae Song*

A Survey of Digital Twin Healthcare Cybersecurity Implementation Methods
*William Fogus and Yeong-Tae Song*

**12:00 – 2:00 PM – Luncheon (on your own)**

**2:00 – 3:20 PM – Software Engineering I** **AEB 140/145**
**Chair: TBA**

Automated Code Summarization by Training Large Language Models with Crowdsourced Knowledge
*Meng Xia, Shradha Maharjan and Myoungkyu Song*

SYNC: SYnergistic aNnotation Collaboration between Humans and LLMs for Enhanced Model Training
*Tammy Le, Will Taylor, Shradha Maharjan, Meng Xia and Myoungkyu Song*

Mizu: A Lightweight Multi-Threaded Threaded-Code Interpreter that Can Run Almost Anywhere with a C++ Compiler

*Joshua Dahl, Quinn Contaldi, Kiana Partovi and Frederick Harris*

Enhancing New Product Development Performance: A Hybrid Agile-Stage-Gate Approach with Parallel Sprint Planning
*Sayeda Rahnuma Akthar, Farzana Sadia and Mahady Hasan*

**2:00 – 3:20 PM – Methods I** **AEB 150**
**Chair: TBA**

Mining Patterns for Maximal Coverage in Time Series
*Neeraj Nagar, Arthur Grisel-Davy and Sebastian Fischmeister*

Generation of 3D Distributions Using Wasserstein Distance in Hybrid Quantum-Classical Generative Adversarial Networks
*Jesus Fernando Franco-Lopez, Luis Daniel Benavides-Navarro, Yavar Jarrah-Nezhad and Wilmer Edicson Garzon-Alfonso*

Addressing the Rise of AI-Generated Misinformation Challenges and Implications
*Mohamad Jawhar, Houssein Mourad, Shadi Jawhar and Majed Almotairi*

Investigating the Applicability of Image Generation Models to Weakness Detection Tasks
*Haruki Yokoyama and Fuyuki Ishikawa*

**3:20 – 3:50 PM – Coffee Break** **Lobby**

**3:50 – 5:30 PM – Applications II** **AEB 140/145**
**Chair: TBA**

Attention-Driven Separable Convolutional Networks for Efficient and Explainable Forest Fire Detection: ForestFlameNet
*Khalil I. Almakrami, Rose Atuah and Michael P. McGuire*

Interpretable News Clustering and Topic Attribution for the U.S. Presidential Election: An AIME and LLM Approach
*Takafumi Nakanishi*

From Menus to Management: An Integrated Platform Leveraging Large Language Models in Automatic Restaurant Ordering Systems
*Pouria Tayebi, Yingcheng Sun and Yifan Guo*

Exploring the Advances in Using Machine Learning to Identify Technical Debt and Self-Admitted Technical Debt
*Eric Melin and Nasir Eisty*

Optimizing Supply Chain Management for Small and Medium-Sized Businesses Using AI: A Comparative Analysis of GPT-4.5, Grok 3, Gemini 2.0, and DeepSeek R-1
*Shreeyash Vyakarnam, Bharath Raju Kanchipuram Baburavi, Lawanya Awasthi, Manan Malik, Abheek Abhijit Maiti and Anumitha Panneerselvan*

**3:50 – 5:30 PM – Healthcare I** **AEB 150**
**Chair: TBA**

Edge AI Empowered Predictive Analytics for Smart Healthcare
*John Mulo, Hengshuo Liang, Lin Deng, Guobin Xu and Wei Yu*

XcepKNN: Leveraging Hybrid Deep Learning for Enhanced MRI-Based Brain Tumor Classification
*Ethan Gilles, Yuqi Song, Xin Zhang and Fei Zuo*

DeepDetect: A Novel Approach To Detecting Breast Cancer using Artificial Intelligence
*Anjani Chebrolu*

Identifying Common Themes and Persuasive Elements in Healthcare Customer Reviews
*Kanatip Prompol, Uraiwan Jansong and Kulsawasd Jitkajornwanich*

Diabetes Management with Automated Health Monitoring and Diet Recommendations for Patients
*Md. Jahidul Hossain Mekat, Kazi Samin Nawal, Mustaqueem Alam, Anika Jasim Ema, Sadita Ahmed and Mahady Hasan*

**6:20 – 8:00 PM – Dinner Banquet (provided by conference)** **TBD**

**Day 2 - Friday, May 30, 2025**

**8:00 – 10:30 AM – Registration** **Lobby**

**9:00 – 10:30 AM -- Special Session 1: Artificial Intelligence for Health Literacy Transformation (AIHLT 2025)** **AEB 140/145**
**Chair: TBA**

Improving mental health literacy using AI: A Scoping Review
*Kristin A. Schuller, Samia Alghamdi, Jung Hoon Lee, and Yeong-Tae Song*

Can AI Bridge the Health Literacy Gap? An Analysis of Requirements and Opportunities
*Mouheb Mehdoui*

Bridging Language Gaps in Healthcare: Multilingual NLP for Enhanced Health Literacy and Data Analysis
*Mouheb Mehdoui and Amel Fraisse*

**9:00 – 10:30 AM -- Special Session 2: Transformative Technologies: Big Data, Machine Learning, Cybersecurity, and Blockchain for the Next Era of Digital Innovation** **AEB 150**
**Chair: TBA**

Deep Learning Approaches for Credit Card Fraud Detection: A Data Balancing Perspective
*Jongyeop Kim, Jongho Seol, Seonghyeon Kim, Lei Chen*

Fraud Detection in Financial Transactions Using Deep Neural Networks
*Lord Coffie, Jongyeop Kim, Jongho Seol*

A Hybrid Deep Learning Approach for Predicting Campaign Success
*Melvin Ajuluchukwu, Lord Coffie, Jongyeop Kim*

**10:30 – 11:00 AM – Coffee Break** **Lobby**

**11:00 AM – 12:00 PM – Software Engineering II** **AEB 140/145**
**Chair: TBA**

**11:00 AM – 12:00 PM – Special Session 2: Transformative Technologies: Big Data, Machine Learning, Cybersecurity, and Blockchain for the Next Era of Digital Innovation** **AEB 150**
**Chair: TBA**
Visualizing and Securing Linguistic Patterns: POS Tag Graphs with Encryption Techniques
*Seonghyeon Kim, Lei Chen, Jongyeop Kim, Jongho Seol*

Visualizing Narrative Structures: Chapter-wise Character Relationship Networks in Novels
*Azeezat Akinola, Jongyeop Kim, Jongho Seol*

Forecasting Air Quality Index (AQI) Using Machine Learning Techniques

*Lord Coffie, Emmanuella Bosompema Obeng, Mary Dufie Afrane, Jongyeop Kim, Yao Xu*

**12:00 – 1:00 PM – Luncheon (provided by conference)** **TBD**

**2:00 – 3:20 PM – Software Engineering III** **AEB 140/145**
**Chair: TBA**

Intelligent Code Completion by a Unified Multi-task Learning with a Large Language Model
*Shradha Maharjan, Meng Xia, Tae Hyuk Ahn and Myoungkyu Song*

Exploring the Application of Agile in Large-Scale, Safety-Critical, Cyber-Physical Systems
*Robin Yeman and Yashwant Malaiya*

Enhancing Commit Message Generation in Software Repositories: A RAG-Based Approach
*Mehrdad Yadollahi, Abbas Heydarnoori and Iman Khazrak*

Misinformation detection using hybrid statistical and machine learning techniques
*Chandrasekar Ramachandran*

**2:00 – 3:20 PM – Application III** **AEB 150**
**Chair: TBA**

RoGANDER: A Robust Generative Adversarial Network for Distributed Energy Resources
*Papa Pene, Weixian Liao, Wei Yu and David Griffith*

Automated Demand Forecasting in Retail Supply Chains Using Deep Reinforcement Learning
*Vasanth Rajendran and Suba Ranjani Jayabal*

Analyzing and Predicting Employee Turnover in the Restaurant Industry
*Xin Zhang, Sarah Kayembe, Forest Ma, Yuqi Song and Fei Zuo*

Hate Speech Detection in Tunisian Dialect
*Helmi Baazaoui*

**3:20 – 3:50 PM – Coffee Break** **Lobby**

**3:50 – 5:30 PM – Education I** **AEB 140/145**
**Chair: TBA**

Predicting the Risk of Ultimate Low Ratings in Online Asynchronous Courses: Analyzing Engagement, Complexity, and Early Ratings for Early Interventions
*Obada Kraishan, Kulsawasd Jitkajornwanich, Nattadet Vijaranakul and Kerk Kee*

Agile Methodologies in Education: The Common Ground of Personalized Learning and Project-Based Learning
*Nuno Pombo and Carlos Cunha*

An Enhanced Framework for Sustainable Education using Project-Based Learning
*Sayeda Rahnuma Akthar, Mahady Hasan, Awindrela Roy Dristy, Md.Bayezid Hasan Siam, S. M. Tanzim Tuhin and Farzana Sadia*

AI-Powered Career Matching System for University Students: Bridging Education and Employment
*Mohamad Jawhar, Shadi Jawhar, Jeremy Miller and Majed Almotairi*

Exploring Screen Management Practices for Families with Young Children
*Kehinde Ajayi, Gerald Jerome, Ziying Tang and Jinjuan Feng*

**3:50 – 5:30 PM – Security I** **AEB 150**
**Chair: TBA**

Towards Understanding Visualization Impedance mismatch
*Luca Vannuccini and Andrea Janes*

Lynx-Net: Privacy-Preserving Neural Network Training and Malware Detection at IoT-Edge
*Sabbir Ahmed Khan, Zhuoran Li, Danella Zhao, Woosub Jung and Ravi Mukkamala*

The Kubernetes Security Landscape: AI-Driven Insights from Developer Discussions
*J. Alexander Curtis and Nasir Eisty*

Smells vs. Software Antipattern: Do Definitions Matter?
*Richard Rivera, Marcela Mosquera, Carlos Eduardo Anchundia Valencia, Pamela Flores, Alejandro Jimenez and Xavier Carpio*

A Privacy-Preserving System for AI-Powered Dynamic Group Assignment, Behavioral Insights, and Personalized Coaching
*Nariman Mani and Salma Attaranasl*

**Posters** **Lobby**

Proactive Scenario-driven Adaptable Defensive Driving Architecture for Autonomous Driving Environment
*Subi Kim, Jieun Kang and Yong Ik Yoon*

SAPGDR: Situation Adaptive Prompt Guided Data Rectification Architecture for Safety AI
*Jieun Kang, Subi Kim, Jimin Ryu and Yong Ik Yoon*

Transforming Cancer Care and Research with Pega A Unified Approach to Data and Workflow Integration
*Sairohith Thummarakoti*

Applicability of MongoDB for Smart City Digital Twin Implementation
*Colin Ripley, Mian Qian, Yuanqiong Wang and We Yu*

Sustaining Software Relevance: Enhancing Evolutionary Capacity through Maintainable Architecture and Quality Metrics
*Daniel Durai Raj Cromwel Thomas*

Interpretable Neural Networks: Bridging GAMs
*Vinaykumar Chitukoorir*

**Day 3 - Saturday, May 31, 2025**

**9:00 – 10:30 AM – Methods II** **AEB 140/145**
**Chair: TBA**

Metamorphic Testing for Fairness Evaluation in Large Language Models: Identifying Bias in LLaMA and GPT
*Harishwar Reddy Anthamola, Madhusudan Srinivasan and Upulee Kanewala*

LLM Assisted Attribute Generation for Image Datasets – A ChatGPT Case Study
*Atul Rawal, Adrienne Raglin, Qianlong Wang and Ziying Tang*

A Study on The Performances of Sui Move Object-Centric Models
*Nahid Ebrahimi Majd, Andres Hinojosa, Calvary Fisher, Fernando Landeros and Foteini Baldimtsi*

Concept of AI-Based Automatic Unauthorized Communication Prevention Function in DACS-Based PBNM Scheme
*Kazuya Odagiri, Shogo Shimizu and Naohiro Ishii*

**9:00 – 10:30 AM – Healthcare II + Security II** **AEB 150**
**Chair: TBA**

RBDGuard: Accessible Early Detection of REM Sleep Behavior Disorder Using Single-Lead ECG and Unsupervised Deep Learning
*Brenna Ren*

On-device ai for secure patient health monitoring
*Abhishek Rangi and Yeong-Tae Song*

Rapid Real-Time Android Malware Detection Using Opcode Analysis: A Proof-of-Concept Framework
*Kyungtae Kim, Emilio Soriano, Ethan Christmas, Doosung Hwang and Donghoon Kim*

Stealthy No More: An Effective Ensemble Learning Approach for Detecting Android RAT
*Nesreen Dalhy and Karim Elish*

**10:30 – 11:00 AM – Coffee Break** **Lobby**

**11:00 AM – 12:00 PM – Systems** **AEB 140/145**
**Chair: TBA**

Smart Scholarship Approval System by Using Blockchain and Sentiment Analysis
*Mohammed Alzahrani, Qianlong Wang, Lida Haghnegahdar, Weixian Liao and Wei Yu*

On Low-Cost Aquaponic Monitoring Ecosystem
*Mian Qian, Erica Zhang, William Hao, Michael Burkett and Wei Yu*

A Survey of Hyperledger Fabric for Business Use Cases
*Oliver Pandian and Yeong-Tae Song*

**11:00 AM – 12:00 PM – Special Session 3: Intelligent System and Software: Theory and Application** **AEB 150**
**Chair: TBA**

Lagged Co-movement Prediction of Sectoral Indices in Stock Market using Frequent Itemset Mining
*Soumya Sen*

Using Machine Learning and Explainable Artificial Intelligence for Election Voting Prediction
*George Anderson*

**12:00 – 12:05 PM – Closing Remark**