

# 2025 40th IEEE/ACM International Conference on Automated Software Engineering Workshops (ASEW) **ASEW 2025**

## Table of Contents

### **AIMS 2025 - 1st International Workshop on AI for Software Modernization**

Message from the AIMS 2025 Chairs .....	1
Grammar- and Coverage-Based Augmentation of Programs for Training LLMs .....	3
<i>Shin Saito (IBM Research - Tokyo), Takaaki Tateishi (IBM Research, Tokyo), and Yasuharu Katsuno (IBM Research - Tokyo)</i>	
Uncovering Code Insights: Leveraging GitHub Artifacts for Deeper Code Understanding .....	7
<i>Ziv Nevo (IBM Research, Israel), Orna Raz (IBM Research, Israel), and Karen Yorav (IBM Research, Israel)</i>	
Leveraging LLM for Software Modernization: COBOL Functionality Extraction Case Study .....	14
<i>ASHA RAJBHOJ (Tata Consultancy Services, INDIA), Akanksha Somase (Tata Consultancy Services, INDIA), Tanay Sant (Tata Consultancy Services, INDIA), Ajim Pathan (Tata Consultancy Services, INDIA), Purvesh Doud (Tata Consultancy Services, INDIA), and Vinay Kulkarni (Tata Consultancy Services, INDIA)</i>	
Microservices Identification Using LLM .....	22
<i>Jay Gandhi (Tata Consultancy Services, India), Raveendra Kumar Medicherla (Tata Consultancy Services, India), Manasi Patwardhan (TCS Research, Tata Consultancy Services, India), Dipesh Sharma (AMD, India), and Ravindra Naik (COEP Tech, India)</i>	
Multilingual Code Explanation for Mainframe Languages .....	26
<i>Kaoru Shinkawa (IBM Research, Japan), Ai Ishida (IBM Research, Japan), Yasuharu Katsuno (IBM Research, Japan), and Fumiko Satoh (IBM Research, Japan)</i>	
Vintage Code, Modern Judges: Meta-Validation in Low Data Regimes .....	30
<i>Ora Fandina (IBM Research, Israel), Gal Amram (IBM Research, Israel), Eitan Farchi (IBM Research, Israel), Shmulik Froimovich (IBM Research ), Raviv Gal (IBM Research, Israel), Wesam Ibraheem (IBM Research, Israel), Rami Katan (IBM Research, Israel), Alice Podolsky (IBM Research, Israel), and Orna Raz (IBM Research, Israel)</i>	

LLM Agents for Automated Dependency Upgrades .....	34
<i>Vali Tawosi (J.P. Morgan AI Research, UK), Salwa Alamir (J.P. Morgan AI Research, UK), Xiaomo Liu (J.P. Morgan AI Research, UK), and Manuela Veloso (J.P. Morgan AI Research, UK)</i>	

## AgenticSE 2025 - The Autonomous Agents in Software Engineering Workshop

Message from the AgenticSE 2025 Chairs .....	38
Bridging LLM Planning Agents and Formal Methods: A Case Study in Plan Verification .....	39
<i>Keshav Ramani (J.P. Morgan AI Research, UK), Vali Tawosi (J.P. Morgan AI Research, UK), Salwa Alamir (J.P. Morgan AI Research, UK), and Daniel Borrajo (J.P. Morgan AI Research, UK)</i>	
LLMs in Debate: Does Arguing Make Them Better at Detecting Metamorphic Relations? .....	43
<i>Dibyendu Brinto Bose (Virginia Tech), Yoseph Berhanu Alebachew (Virginia Tech), and Chris Brown (Virginia Tech)</i>	
A 3-Layer Agentic Model for Nonfunctional Requirements in Software Engineering .....	51
<i>Ehsan Zabardast (Blekinge Institute of Technology and Gaetir, Sweden), Tiago Vieira (Independent Researcher, Sweden), and Tony Gorschek (Blekinge Institute of Technology and fortiss, Sweden; fortiss GmbH, Germany)</i>	
Leveraging Large Language Models for Cybersecurity Risk Assessment — A Case from Forestry Cyber-Physical Systems .....	58
<i>Fikret Mert Gültekin (University of Gothenburg, Sweden), Oscar Lilja (University of Gothenburg, Sweden), Ranim Khojah (University of Gothenburg, Sweden), Rebekka Wohlrab (University of Gothenburg, Sweden; Carnegie Mellon University, USA), Marvin Damschen (RISE Research Institutes of Sweden, Sweden), and Mazen Mohamad (RISE Research Institutes of Sweden, Sweden; University of Gothenburg, Sweden; University of Gothenburg, Sweden)</i>	
The Last Dependency Crusade: Solving Python Dependency Conflicts with LLMs .....	66
<i>Antony Bartlett (Delft University of Technology, The Netherlands), Cynthia Liem (Delft University of Technology, The Netherlands), and Annibale Panichella (Delft University of Technology, The Netherlands)</i>	
AgentGuard: Runtime Verification of AI Agents .....	74
<i>Roham Koohestani (JetBrains Research, The Netherlands)</i>	

## A-Mobile 2025 - 8th International Workshop on Advances in Mobile App Analysis

Message from the A-Mobile 2025 Chairs .....	78
Reliable and Interpretable Android Malware Detection at Scale .....	79
<i>Michael Tegegn (The University of British Columbia, Canada) and Julia Rubin (The University of British Columbia, Canada)</i>	

Finding Keywords for Architectural Erosion Detection in GitHub Commits for Android Applications .....	83
<i>Juan Camilo Acosta-Rojas (Universidad de los Andes, Colombia) and Camilo Andrés Escobar-Velásquez (Universidad de los Andes, Colombia)</i>	
A Data-Driven Approach for Automated Quality Concern Extraction from App Reviews .....	87
<i>Khubaib Amjad Alam (Al Ain University, UAE), Maryam Hussain (National University of Computer and Emerging Sciences, Pakistan), Umer Daraz (National University of Computer and Emerging Sciences, Pakistan), Behjat Zuhaira (National University of Computer and Emerging Sciences, Pakistan), and Muhammad Haroon (National University of Computer and Emerging Sciences, Pakistan)</i>	
DroidNative: A Greedy-Constructed Large-Scale Indexing for Android Native Libraries .....	95
<i>Shiyang Zhang (Tianjin University, China), Chengwei Liu (Nanyang Technological University, Singapore), Sen Chen (Nankai University, China), Lyuye Zhang (Nanyang Technological University, Singapore), and Yang Liu (Nanyang Technological University, Singapore)</i>	
A Domain-Independent Framework for Effective Prioritization and Evaluation of UX Aspects in Mobile Apps .....	99
<i>Haifa Alshammare (KFUPM, Saudi Arabia; Technical and Vocational Training Corporation, Saudi Arabia), Mohammad Alshayeb (KFUPM, Saudi Arabia; Interdisciplinary Research Center for Intelligent Secure Systems, Saudi Arabia), and Malak Baslyman (KFUPM, Saudi Arabia; Interdisciplinary Research Center for Finance and Digital Economy, Saudi Arabia)</i>	
From Kotlin to Swift and Back: Toward Fully Automated Cross-Language Code Transpilation .....	107
<i>Sachi Lad (University College London, UK), Carol Hanna (University College London, UK), and Justyna Petke (University College London, UK)</i>	

## ASYDE 2025 - 7th International Workshop on Automated and Verifiable Software sYstem DEvelopment

Message from the ASYDE 2025 Chairs .....	111
Pre-Filtering Code Suggestions using Developer Behavioral Telemetry to Optimize LLM-Assisted Programming .....	113
<i>Mohammad Nour Al Awad (ITMO University), Sergey Ivanov (ITMO University), and Olga Tikhonova (ITMO University)</i>	
On Effectiveness of Formal Model Repair by Large Language Models .....	121
<i>Sebastião Carvalho (Instituto Superior Técnico, Portugal), Tsutomu Kobayashi (Japan Aerospace Exploration Agency, Japan), and Fuyuki Ishikawa (National Institute of Informatics, Japan)</i>	
Regression Testing Skill Transfer to Industry: A Preliminary Study in Higher Education .....	129
<i>Andrada-Mihaela-Nicoleta Moldovan (Babeş-Bolyai University, Romania) and Andreea Vescan (Babeş-Bolyai University, Romania)</i>	
ForeSPECT: A Model-Driven Framework for Validation and Traceability in Forecasting Systems...	137
<i>Rijul Saini (NAV CANADA, Canada)</i>	

BMuzz: Combining Bounded Model Checking and Fuzzing to Enhance Code Coverage .....	145
<i>Markus Krahl (University of Applied Sciences Munich, Germany), Matthias Gdemann (University of Applied Sciences Munich, Germany), and Stefan Wallentowitz (University of Applied Sciences Munich, Germany)</i>	
Improving Automated Program Verification for Java Programs with Fuzzing .....	153
<i>Soha Hussein (Ain Shams University, Egypt) and Stephen McCamant (University of Minnesota, USA)</i>	
MicroViSim: Simulation and Visualization of Kubernetes-Based Microservice Systems .....	161
<i>Wei-Kai Lin (National Taiwan Ocean University, Taiwan), Shang-Pin Ma (National Taiwan Ocean University, Taiwan), Shin-Jie Lee (National Cheng Kung University, Taiwan), and Wen-Tin Lee (National Kaohsiung Normal University, Taiwan)</i>	
VeriODD: From YAML to SMT-LIB – Automating Verification of Operational Design Domains .....	165
<i>Bassel Rafie (Clausthal University of Technology, Germany), Christian Schindler (Clausthal University of Technology, Germany), and Andreas Rausch (Clausthal University of Technology, Germany)</i>	
LLM-Assisted Tool for Joint Generation of Formulas and Functions in Rule-Based Verification of Map Transformations .....	169
<i>Ruidi He (Technische Universitt Clausthal, Germany), Yu Zhang (Technische Universitt Clausthal, Germany), Meng Zhang (Technische Universitt Clausthal, Germany), and Andreas Rausch (Technische Universitt Clausthal, Germany)</i>	

## **Ex-ASE 2025 - 1st International Workshop on Explainable Automated Software Engineering**

Message from the Ex-ASE 2025 Chairs .....	173
K-SNAC: Robust Neuron Coverage for OOD Generalization and Test Adequacy .....	176
<i>Seungwon Woo (University of Seoul, South Korea), Hyunseo Shin (University of Seoul, South Korea), Eunkyung Choi (University of Seoul, South Korea), Juheon Kang (University of Seoul, South Korea), and Wonseok Hwang (University of Seoul, South Korea)</i>	
SeedUI: Understanding Initial Seeds in Fuzzing .....	181
<i>Sriteja Kummita (Paderborn University Germany), Eric Bodden (Paderborn University, Germany), Miao Miao (University of Texas at Dallas, USA), and Shiyi Wei (University of Texas at Dallas, USA)</i>	
From Facts to Foils: Designing and Evaluating Counterfactual Explanations for Smart Environments .....	186
<i>Anna Trapp (University of Cologne, Germany), Mersedeh Sadeghi (University of Cologne, Germany), and Andreas Vogelsang (University of Duisburg-Essen, Germany)</i>	

Explaining Software Vulnerabilities with Large Language Models .....	194
<i>Oshando Johnson (Fraunhofer IEM, Germany), Alexandra Fomina (Chapman University, United States), Ranjith Krishnamurthy (Fraunhofer IEM, Germany), Vaibhav Chaudhari (Paderborn University, Germany), Rohith Kumar Shanmuganathan (University of Oldenburg, Germany), and Eric Bodden (Paderborn University and Fraunhofer IEM, Germany)</i>	
Explaining Code Risk in OSS: Towards LLM-Generated Fault Prediction Interpretations .....	199
<i>Elijah Kayode Adejumo (George Mason University, USA) and Brittany Johnson (George Mason University, USA)</i>	
Explainability in Automated Cross-Domain Model-Driven Brake System Development .....	204
<i>Nathan Hagel (Karlsruhe Institute of Technology, Germany), Johannes Mäkelburg (Technische Universität München, Germany), Claus Hammann (Karlsruhe Institute of Technology, Germany), Thomas Weber (Karlsruhe Institute of Technology, Germany), Thomas Alexander Völk (Karlsruhe Institute of Technology, Germany), Francesco P. Urbano (Karlsruhe Institute of Technology, Germany), Patrick Grycz (Karlsruhe Institute of Technology, Germany), Katharina Bause (Karlsruhe Institute of Technology, Germany), Minakshi Kaushik (Karlsruhe Institute of Technology, Germany), Vincenzo Scotti (Karlsruhe Institute of Technology, Germany), Akhila Bairy (Karlsruhe Institute of Technology, Germany), Maike Schwammberger (Karlsruhe Institute of Technology, Germany), Maribel Acosta (Technische Universität München, Germany), Albert Albers (Karlsruhe Institute of Technology, Germany), Anne Koziolk (Karlsruhe Institute of Technology, Germany), and Tobias Düser (Karlsruhe Institute of Technology, Germany)</i>	

## ISE 2025 - 4th International Workshop on Intelligent Software Engineering

Message from the ISE 2025 Chairs .....	212
Optimizing LLM Code Suggestions: Feedback-Driven Timing with Lightweight State Bounds .....	214
<i>Mohammad Nour Al Awad (ITMO University, Russia), Sergey Ivanov (ITMO University, Russia), and Olga Tikhonova (ITMO University, Russia)</i>	
Leveraging Large Language Models for Use Case Model Generation from Software Requirements .....	222
<i>Tobias Eisenreich (Technical University of Munich, Germany), Nicholas Friedlaender (Technical University of Munich, Germany), and Stefan Wagner (Technical University of Munich, Germany)</i>	
Automated Evolutionary Hyperparameter Tuning for NLP-Based Test Case Generation .....	229
<i>Ivan Malashin (Bauman Moscow State Technical University, Russia), Igor Masich (Bauman Moscow State Technical University, Russia), Sergei Kurashkin (Bauman Moscow State Technical University, Russia), Andrei Gantimurov (Bauman Moscow State Technical University, Russia), Aleksei Borodulin (Bauman Moscow State Technical University, Russia), Vladimir Neluyb (Bauman Moscow State Technical University, Russia), and Vadim Tynchenko (Bauman Moscow State Technical University, Russia)</i>	

Towards MPC-Driven Software Adaptation: A Dual-Layer Approach Combining ICNN-Based Modeling and Delta-Based Tuning .....	237
<i>Yitong Shi (Institute of Science Tokyo, Japan), Chenyu Hu (Institute of Science Tokyo, Japan), Mingyue Zhang (Southwest University, China), Nianyu Li (ZGC National Laboratory, China), Jialong Li (Waseda University, Japan), and Kenji Tei (Institute of Science Tokyo, Japan)</i>	
AI for Requirements Engineering: Industry Adoption and Practitioner Perspectives .....	245
<i>Lekshmi Murali Rani (Chalmers University of Technology; University of Gothenburg, Sweden), Richard Berntsson Svensson (Chalmers University of Technology; University of Gothenburg, Sweden), and Robert Feldt (Chalmers University of Technology; University of Gothenburg, Sweden)</i>	
Fair Developer Score: Build-Adjusted Measurement of Effort and Impact .....	253
<i>Xinzhou Wang (Northwestern University, United States), Jiancong Zhu (Northwestern University, United States), Jinghan Feng (Northwestern University, United States), Zixuan Zhang (Northwestern University, United States), Joshua Rauvola (University of Chicago, United States), Devon Delgado (Digital Emissions, USA), Ahmad Antar (Digital Emissions, USA), and Abid Ali (Northwestern University, United States)</i>	
Exploring the SECURITY.md in the Dependency Chain: Preliminary Analysis of the PyPI Ecosystem .....	261
<i>Chayanid Termphaiboon (Mahidol University, Thailand), Raula Gaikovina Kula (The University of Osaka, Japan), Youmei Fan (Nara Institute of Science and Technology, Japan), Morakot Choetkiertikul (Mahidol University, Thailand), Chaoyong Ragkhitwetsagul (Mahidol University, Thailand), Thanwadee Sunetnanta (Mahidol University, Thailand), and Kenichi Matsumoto (Nara Institute of Science and Technology, Japan)</i>	
Explainable AI for Issue Classification: A Multi-Class Study with LIME and SHAP .....	269
<i>Jueun Heo (Gyeongsang National University, Republic of Korea) and Seonah Lee (Gyeongsang National University, Republic of Korea)</i>	
LLMs Choose the Right Stack: From Patterns to Tools .....	277
<i>Sebastian Copei (Fraunhofer IEE, Germany; Fraunhofer IEE, Germany), Oliver Hohlfeld (University of Kassel, Germany), Jens Kosiol (Philipps-Universität Marburg, Germany), and Aleksandar Ristoski (Fraunhofer IEE, Germany)</i>	

## **MAS-GAIN 2025 - 1st International Workshop on Multi-Agent Systems using Generative Artificial INtelligence for Automated Software Engineering**

Message from the MAS-GAIN 2025 Chairs .....	285
ALMAS: An Autonomous LLM-Based Multi-Agent Software Engineering Framework .....	288
<i>Vali Tawosi (J.P. Morgan AI Research, UK), Keshav Ramani (J.P. Morgan AI Research, USA), Salwa Alamir (J.P. Morgan AI Research, UK), and Xiaomo Liu (J.P. Morgan AI Research, USA)</i>	

GRACG: Graph Retrieval Augmented Code Generation .....	292
<i>Konstantin Fedorov (ITMO University, Russia), Boris Zarubin (Central University, Russia), and Vladimir Ivanov (Innopolis University, Russia)</i>	
Bridging the Prototype-Production Gap: A Multi-Agent System for Notebooks Transformation .....	300
<i>Hanya Elhashemy (Siemens AG, Germany), Youssef Lotfy (Technical University of Munich, Germany), and Yongjian Tang (Siemens AG, Germany)</i>	
Multi-agent systems for improved information retrieval – leveraging autonomous agents and LLM models .....	304
<i>Aneta Poniszewska-Maranda (Lodz University of Technology, Poland), Maciej Kopa (Lodz University of Technology, Poland), and Bożena Borowska (Lodz University of Technology, Poland)</i>	
Towards Multi-Agentic AI for Automated Software Design and Modelling: Challenges and Opportunities .....	312
<i>Hoa Khanh Dam (University of Wollongong, Australia)</i>	
Traceability and Accountability in Role-Specialized Multi-Agent LLM Pipelines .....	316
<i>Amine Barrak (Oakland University, USA)</i>	

## **VARSE 2025 - 3rd International Workshop on Virtual and Augmented Reality Software Engineering**

Message from the VARSE 2025 Chairs .....	324
A Test Automation Framework for User Interaction in Extended Reality Applications .....	326
<i>Ruizhen Gu (University of Sheffield, UK) and José Miguel Rojas (University of Sheffield, UK)</i>	
NavAI: A Generalizable LLM Framework for Navigation Tasks in Virtual Reality Environments ...	332
<i>Xue Qin (Villanova University, U.S.) and Matthew DiGiovanni (Villanova University, U.S.)</i>	
ARTRIP: Automatic AR Testing with Randomized Interaction Patterns .....	338
<i>Maria Rivera (The University of Texas at San Antonio, USA), Lisette Isais (The University of Texas at San Antonio, USA), and Xiaoyin Wang (The University of Texas at San Antonio, USA)</i>	
Toward Static Analysis of Immersive Attacks .....	343
<i>Kadiray Karakaya (Paderborn University, Germany), Jonas Klauke (Paderborn University, Germany), and Enes Yigitbas (Paderborn University, Germany)</i>	
A Conformance Checking System for Interaction Testing in Virtual Reality .....	349
<i>Vijay Aravynthan S.R. (International Institute of Information Technology, India) and Raghu Reddy Y. (International Institute of Information Technology, India)</i>	

# Workshop and Challenge on Optimization of Context Collection for Code Completion

Message from the Workshop and Challenge Chairs .....	357
Challenge on Optimization of Context Collection for Code Completion .....	358
<i>Dmitry Ustalov (JetBrains, Serbia), Egor Bogomolov (JetBrains Research, The Netherlands), Alexander Bezzubov (JetBrains Research, The Netherlands), Yaroslav Golubev (JetBrains Research, The Netherlands), Evgeniy Glukhov (JetBrains Research, The Netherlands), Georgii Levtsov (Neapolis University Pafos, Cyprus), and Vladimir Kovalenko (JetBrains Research, The Netherlands)</i>	
SpareCodeSearch: Searching for Code Context When You Have No Spare GPU .....	365
<i>Minh Nguyen (University College Dublin, Ireland)</i>	
On the Importance of Context Filtering in Retrieval-Augmented Code Completion .....	369
<i>Sergey Sedov (New York University), Vsevolod Savinskiy (Constructor University Bremen), and Andrei Arzhantsev (Technical University of Munich)</i>	
Beyond More Context: How Granularity and Order Drive Code Completion Quality .....	372
<i>Uswat Yusuf (Concordia University, Canada), Genevieve Caumartin (Concordia University, Canada), and Diego Elias Costa (Concordia University, Canada)</i>	
Exploration of Structural Code Relationship Space for Context Collection .....	376
<i>Constantinos Sofianos (Independent Researcher, Cyprus)</i>	
Relative Positioning Based Code Chunking Method For Rich Context Retrieval In Repository Level Code Completion Task With Code Language Model .....	380
<i>Imranur Rahman (North Carolina State University) and Md Rayhanur Rahman (The University of Alabama)</i>	
Author Index .....	385