APSEC 2021 Program

(Time Zone: UTC+8, Taipei Time)
### 4th December 2021 (Sat.)

<table>
<thead>
<tr>
<th>Time</th>
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<tbody>
<tr>
<td>09:00 - 12:00</td>
<td><em>Microsoft Teams Testing</em></td>
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<tr>
<td>14:00 - 17:00</td>
<td><em>Microsoft Teams Testing</em></td>
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### Day 1: 6th December 2021 (Mon.)

<table>
<thead>
<tr>
<th>Time</th>
<th>Event</th>
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| 09:00 - 12:00 | *SEED 2021*  
4th Software Engineering Education Workshop: Emerging Needs of Software Engineering Education |
| 10:00 - 14:40  | *iMLSE 2021*  
3rd International Workshop on Machine Learning Systems Engineering  
(Break: 12:00-13:30) |
| 13:30 - 17:30  | *NLPaSE 2021*  
2nd Workshop on NLP Advancements for Software Engineering |
| 14:00 - 19:00  | *RESOSY 2021*  
1st International Interdisciplinary Workshop on Requirements Engineering for Sociotechnical Systems |
| 14:30 - 17:00  | *QuASoQ 2021*  
9th International Workshop on Quantitative Approaches to Software Quality |
<p>| 18:00 - 20:00  | <em>Steering Committee Meeting</em>                               |</p>
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<tr>
<th>Time</th>
<th>Session 1A: Software Architecture, Modelling and Design</th>
<th>Session 1B: Human Factors and Social Aspects of Software Engineering</th>
<th>Session 1C: Security, Reliability, and Privacy</th>
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<tr>
<td>11:10 - 12:20</td>
<td>Chair: Alan Liu, National Chung Cheng University, Taiwan</td>
<td>Chair: Subhajit Datta, Singapore Management University, Singapore</td>
<td>Chair: Yoshiki Higo, Osaka University, Japan</td>
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<tr>
<th>Time</th>
<th>Session 2A: Software Engineering in Practices-1</th>
<th>Session 2B: Software Repository Mining and Data Analytics-1</th>
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<td>14:00 - 15:30</td>
<td>Chair: Fang Yu, National Chengchi University, Taiwan</td>
<td>Chair: Yung-Chun Chang, Taipei Medical University, Taiwan</td>
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<thead>
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<th>Time</th>
<th>Session 3A: Software Engineering in Practices-2</th>
<th>Session 3B: AI for Software Engineering</th>
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<td>15:50 - 17:00</td>
<td>Chair: Shahida Sulaiman, Universiti Teknologi Malaysia, Malaysia</td>
<td>Chair: Konstantin Kobylkin, Russian Academy of Sciences, Russia</td>
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<tr>
<td>Time</td>
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<tr>
<td>09:50 – 10:00</td>
<td><strong>Awards Announcement</strong></td>
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<td></td>
<td>Host: Prof. Shang-Pin Ma, National Taiwan Ocean University, Taiwan</td>
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<tr>
<td>10:00 – 11:00</td>
<td><strong>Keynote 2: “Quantitative Symbolic Analysis for Software Security and Dependability”</strong></td>
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<tr>
<td></td>
<td>Speaker: Tevfik Bultan, University of California, USA</td>
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<td>Host: Prof. Deron Liang, National Central University, Taiwan</td>
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<tr>
<td>10:00 – 11:00</td>
<td>Break</td>
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<td>11:00 – 11:10</td>
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<td>11:10 – 12:20</td>
<td><strong>Session 4A: Testing, Verification, and Validation-1</strong></td>
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<td>Chair: Chien-Hung Liu, National Taipei University of Technology, Taiwan</td>
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<td>11:10 – 12:20</td>
<td><strong>Session 4B: Software Comprehension, Visualization, and Traceability</strong></td>
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<td>Chair: Wangshu Liu, Nanjing University, China</td>
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<td>12:20 – 13:00</td>
<td>Break</td>
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<td>13:00 – 17:00</td>
<td><strong>IWESQ 2021</strong></td>
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<td>3rd International Workshop on Experience with SQuaRE series and its Future Direction</td>
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<td>14:00 – 15:30</td>
<td><strong>Session 5A: Testing, Verification, and Validation-2</strong></td>
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<td>Chair: Jessica Turner, University of Waikato, New Zealand</td>
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<tr>
<td>14:00 – 15:30</td>
<td><strong>Session 5B: Software Repository Mining and Data Analytics-2</strong></td>
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<td>Chair: Yong-Li Hu, Academic Sinica, Taiwan</td>
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<tr>
<td>15:30 – 15:50</td>
<td>Break</td>
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<td>15:50 – 17:20</td>
<td><strong>Session 6A: Requirement Engineering and Model-driven Engineering</strong></td>
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<td>Chair: Pinjia He, Chinese University of Hong Kong, China</td>
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<td>15:50 – 17:20</td>
<td><strong>Session 6B: Debugging, Defect Prediction and Fault Localization</strong></td>
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<td>Chair: Lwin Khin Shar, Singapore Management University, Singapore</td>
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<td>Time</td>
<td>Session 7A: Early Research Achievements-1</td>
<td>Session 8A: Early Research Achievements-2</td>
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<td>09:30 - 10:40</td>
<td>Chair: Cuiyun Gao, Harbin Institute of Technology, China</td>
<td>Chair: Kuo-Hsun Hsu, National Taichung University of Education, Taiwan</td>
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<td>10:40 - 10:50</td>
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<td>10:50 - 12:10</td>
<td>Session 9A: Early Research Achievements-3</td>
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<td>12:10 - 13:00</td>
<td>Break</td>
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<tr>
<td>13:00 - 15:10</td>
<td><strong>SETaiwan 2021</strong></td>
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<tr>
<td>14:00 - 15:10</td>
<td>Session 9B: Poster-2 (Gather Town)</td>
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<td>Chair: YungYu Zhuang, National Central University, Taiwan</td>
<td>Chair: Chiung-Hon Leon Lee, Feng Chia University, Taiwan</td>
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11:10 - 12:20, 7 December 2021  
Chair: Alan Liu, National Chung Cheng University, Taiwan  
- 58 Akira Mizutani, Masami Noro and Atsushi Sawada. Design of Software Architecture for Neural Network Cooperation: Case of Forgery Detection  

Session 1B: Human Factors and Social Aspects of Software Engineering  
11:10 - 12:20, 7 December 2021  
Chair: Subhajit Datta, Singapore Management University, Singapore  
- 41 Lingjia Li, Jian Cao and Qin Qi. Monitoring Negative Sentiment-Related Events in Open Source Software Projects  
- 73 Xin Huang, He Zhang, Xin Zhou, Dong Shao and Letizia Jaccheri. A Research Landscape of Software Engineering Education  
- 258 Ishita Bardhan, Subhajit Datta and Subhashis Majumder. Degree doesn't Matter: Identifying the Drivers of Interaction in Software Development Ecosystems (India, 8:40-9:50)  

Session 1C: Security, Reliability, and Privacy  
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- 19 Asma Razgallah and Raphaël Khoury. Behavioral classification of Android applications using system calls (Canada, 23:10-00:20)  
- 78 Yuxuan Li, Ruitao Feng, Sen Chen, Qianyu Guo, Lingling Fan and Xiaohong Li. IconChecker: Anomaly Detection of Icon-Behaviors for Android Apps  
- 266 Guangwei Li, Ting Yuan, Jie Lu, Lian Li, Xiaobin Zhang, Xu Song and Kejun Zhang. Exposing Vulnerable Paths: Enhance Static Analysis with Lightweight Symbolic Execution
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Chair: Fang Yu, National Chengchi University, Taiwan

- 40 Hongbing Wang and Qi Li. Effective Bug Triage Based on a Hybrid Neural Network
- 267 Pouya Ataei and Alan Litchfield. NeoMycelia: A software reference architecture for big data systems (New Zealand: 19:00-20:30)
- 268 Aiswarya Raj Munappy, Jan Bosch, Helena Holmström Olsson and Anders Jansson. On the Impact of ML use cases on Industrial Data Pipelines (Sweden, 07:00-08:30)
- 277 Liming Dong, He Zhang, Lanxin Yang, Zhiluo Weng and Xin Zhou. Survey on Pains and Best Practices of Code Review

Session 2B: Software Repository Mining and Data Analytics-1
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Chair: Yung-Chun Chang, Taipei Medical University, Taiwan

- 16 Kejun Li, Taiming Wang and Hui Liu. NameChecker: Detecting Inconsistency between Method Names and Method Bodies
- 30 Yoshiki Higo, Junnosuke Matsumoto and Shinji Kusumoto. Tree-based Mining of Fine-grained Code Changes to Detect Unknown Change Patterns
- 75 Siyuan Liu, Jingxuan Zhang, Jiahui Liang, Junpeng Luo, Yong Xu and Chenxing Sun. CHIS: A Novel Hybrid Granularity Identifier Splitting Approach
- 81 Guang Yang, Yanlin Zhou, Xiang Chen and Chi Yu. Fine-grained Pseudo-code Generation Method via Code Feature Extraction and Transformer
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- 84 Yuchu Liu, David Issa Mattos, Jan Bosch, Helena Holmström Olsson and Jonn Lantz. Bayesian propensity score matching in automotive embedded software engineering *(Sweden, 08:50-10:00)*  
- 88: Anas Dakkak, Hongyi Zhang, David Issa Mattos, Jan Bosch and Helena Hölmstrom Olsson. Towards Continuous Data Collection from In-service Products: Exploring the Relation Between Data Dimensions and Collection Challenges *(Sweden, 08:50-10:00)*  
- 275 Chi Li, Yuexing Wang, Min Zhou and Ming Gu. Scalable Fault Detection Based on Precise Access Path  

**Session 3B: AI for Software Engineering**  
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Chair: Konstantin Kobylkin, Russian Academy of Sciences, Russia  
- 53 Zhifang Liao, Wenlong Li, Yan Zhang and Song Yu. Detecting Duplicate Questions in Stack Overflow via Semantic and Relevance Approaches  
- 116 Kien-Tuan Ngo, Dinh-Truong Do, Thu-Trang Nguyen and Hieu Vo Dinh. Ranking Warnings of Static Analysis Tools Using Representation Learning  

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Chair: Jingyue Li, Norwegian University of Science and Technology, Norway  
- 98 Sindre Beba, Magnus Melseth Karlsen, Jingyue Li and Bing Zhang. Critical Understanding of Security Vulnerability Detection Plugin Evaluation Reports *(Norway, 07:50-09:00)*  
- 103 Benjamin Koh, Mojtaba Shahin, Annette Ong, Soo Ying Yeap, Priyanka Saxena, Manvendra Singh and Chunyang Chen. Pandemic Software Development: The Student Experiences from Developing a COVID-19 Information Dashboard *(Australia, 17:50-19:00)*  
- 254 Nataliya Berbyuk Lindstrom, Dina Koutsikouri, Miroslaw Staron, Wilhelm Meding and Ola Söder. Understanding Metrics Team-Stakeholder Communication in Agile Metrics Service Delivery *(Sweden, 07:50-09:00)*
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● 94 Bo Gao, Siyuan Shen, Ling Shi, Jiaying Li, Jun Sun and Lei Bu. Verification Assisted Gas Reduction for Smart Contracts
● 262 Yizheng Chen, Ninad Chaudhari and Mei-Hwa Chen. Context-Aware Regression Test Selection (USA, 23:10-00:20)

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● 11 Aiping Zhang, Kui Liu, Liming Fang, Qianjun Liu, Xinyu Yun and Shouling Ji. Learn To Align: A Code Alignment Network For Code Clone Detection
● 83 Yusuke Shinyama, Yoshitaka Arahori and Katsuhiko Gondow. Improving Semantic Consistency of Variable Names with Use-Flow Graph Analysis
● 125 Yusuke Shinyama, Yoshitaka Arahori and Katsuhiko Gondow. How Do Programmers Express High-Level Concepts using Primitive Data Types?
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- 66 Weigang He, Xia Mao, Ting Su, Yanhong Huang and Jianqi Shi. Data Flow Testing for PLC Programs via Dynamic Symbolic Execution
- 92 Xiang Du, Liangze Yin, Haining Feng and Wei Dong. Program Verification Enhanced Precise Analysis of Interrupt-Driven Program Vulnerabilities
- 115 Wenjie Li, Yanyan Jiang, Jun Ma and Chang Xu. Automatic Performance Testing for Image Displaying in Android Apps
- 121 Azeem Ahmad, Francisco Gomes de Oliveira Neto, Zhiziang Shi, Kristian Sandahl and Ola Leifler. A Multi-factor Approach for Flaky Test Detection and Automated Root Cause Analysis (Sweden, 07:00-08:30)

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Chair: Yong-Li Hu, Academic Sinica, Taiwan
- 21 Yu Wang, Huaxiao Liu, Shanquan Gao and Shujia Li. Categorizing npm Packages by Analyzing the Text Information in Software Repositories
- 36 Yang Yu, Minglai Shao, Hongtao Liu, Ying Sun, Wenjun Wang and Bofei Ma. PGraph: A Graph-based Structure for Interactive Event Exploration on Social Media
- 71 Jingxuan Zhang, Weiqin Zou and Zhiqiu Huang. An Empirical Study on the Usage and Evolution of Identifier Styles in Practice
Session 6A: Requirement Engineering and Model-driven Engineering
15:50 - 17:20, 8 December 2021
Chair: Pinjia He, Chinese University of Hong Kong, China

- 12 Mouna Hammoudi, Christoph Mayr-Dorn, Atif Mashkoor and Alexander Egyed. TraceRefiner: An Automated Technique for Refining Coarse-Grained Requirement-to-Class Traces (Austria, 08:50-10:20)
- 113 Selin Aydin, Andreas Steffens and Horst Lichter. Automated Construction of Continuous Delivery Pipelines from Architecture Models (Germany, 08:50-10:20)
- 260 Stefan Fischer, Lukas Linsbauer and Rudolf Ramler. Comparing Automated Reuse of Scripted Tests and Model-Based Tests for Configurable Software (Austria, 08:50-10:20)

Session 6B: Debugging, Defect Prediction and Fault Localization
15:50 - 17:20, 8 December 2021
Chair: Lwin Khin Shar, Singapore Management University, Singapore

- 17 Stefan Schulz, Emanuel Herrendorf and Christoph Bockisch. Thread-Sensitive Data Race Detection for Java (Germany, 08:50-10:20)
- 68 Hushuang Zeng, Jingxin Chen, Beijun Shen and Hao Zhong. Mining API Constraints from Library and Client to Detect API Misuses
- 123 Lwin Khin Shar, Nguyen Binh Duong Ta and David Lo. Empirical Evaluation of Minority Oversampling Techniques in the Context of Android Malware Detection
- 244 Wangshu Liu, Yongteng Zhu, Xiang Chen, Qing Gu, Xingya Wang and Shenkai Gu. S2LMMD: Cross-Project Software Defect Prediction via Statement Semantic Learning and Maximum Mean Discrepancy
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● 289 Chong Wang, Tianyang Liu, Peng Liang, Maya Daneva and Marten Sinderen. The Role of User Reviews in App Updates: A Preliminary Investigation on App Release Notes
● 292 Ryoko Izuta, Shinsuke Matsumoto, Hiroshi Igaki, Sachio Saiki, Naoki Fukuyasu and Shinji Kusumoto. Detecting Functional Differences using Automatic Test Generation for Automated Assessment in Programming Education
● 295 Humphrey O. Obie, Mojtaba Shahin, John Grundy, Burak Turhan, Li Li, Waqar Hussain and Jon Whittle. Does Domain Change the Opinion of Individuals on Human Values? A Preliminary Investigation on eHealth Apps End-users
● 305 Scott Lupton, Hironori Washizaki, Nobukazu Yoshioka and Yoshiaki Fukazawa. Literature Review on Log Anomaly Detection Approaches Utilizing Online Parsing Methodology

Session 7B: Poster-1
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● 314 Aki Hongo and Naoya Nitta. Towards a Dynamic Visualization of Complex Reverse-Engineered Object Collaboration
● 319 Shaikh Mostafa and Xiaoyin Wang. An Exploration Study On the Dependency Among Vulnerabilities and Bugs (USA, 21:30-22:40)
● 320 Chu-Ti Lin, Sheng-Hsiang Yuan and Jutarporn Intasa. A Learning-to-Rank Based Approach for Improving Regression Test Case Prioritization
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- 283 Yoriyuki Yamagata, Fabien Hervé, Yuji Fujiwara and Katsuro Inoue. Finding repeated strings in code repositories and its applications to code-clone detection
- 284 Puneet Bhateja. Probabilistic testing of asynchronously communicating systems (India, 08:10-09:30)
- 286 Hiroto Watanabe, Shinsuke Matsumoto, Yoshiki Higo, Shinji Kusumoto, Toshiyuki Kurabayashi, Hiroyuki Kirinuki and Haruto Tanno. Applying Multi-Objective Genetic Algorithm for Efficient Selection on Program Generation
- 300 Kapil Singi, Kanchanjot Kaur Phokela, Narendranath Sukhavasi and Vikrant Kaulgud. Framework for Recommending Data Residency Compliant Application Architecture (India, 08:10-09:30)
- 303 Akira Fujimoto, Yoshiki Higo and Shinji Kusumoto. Towards Accurate File Tracking Based on AST Differences
Session 9A: Early Research Achievements-3
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- 282 Cuong Tran Manh, Kien Tran Trung, Tan M. Nguyen, Thu-Trang Nguyen, Son Nguyen and Hieu Vo Dinh. API parameter recommendation based on language model and program analysis
- 285 Rakshit Mittal, Dominique Blouin and Soumyadip Bandyopadhyay. PNPEq: Verification of Scheduled Conditional Behavior in Embedded Software using Petri Nets (France, 07:00-08:10)
- 299 Yuwei Wang, Denis Conan, Sophie Chabridon, Kavoos Bojnourdi and Jingxuan Ma. Runtime models and evolution graphs for the version management of microservice architectures (France, 07:00-08:10)
- 301 Anton V. Uzunov, Matthew Brennan, Mohan Baruwal Chhetri, Bao Vo, Ryszard Kowalczyk and John Wondoh. AWaRE2-MM: A Meta-Model for Goal-Driven, Contract-Mediated, Team-Centric Autonomous Middleware Frameworks for Antifragility (Australia, 17:00-18:10)

Session 9B: Poster-2
14:00 - 15:10, 9 December 2021
Chair: Chiung-Hon Leon Lee, Feng Chia University, Taiwan

- 312 Yi-Chun Yen, Bing-Yun Wang, Xin-Zhe Zhong, Wei-Yi Chiang, Chin-Yun Hsieh and Yu Chin Cheng. Applying Problem Frames in Behavior-Driven Development for Smart Cone System
- 315 Dongwook Choi, Jinseok Heo and Eunseok Lee. Automated Feedback Generation for Multiple Function Programs
- 316 Norihiro Yoshida, Takahiro Shimizu, Ryota Yamamoto and Hiroaki Takada. Extracting a Micro State Transition Table Using the KLEE Symbolic Execution Engine
- 321 Hasnaa El Jihad, Morayo Adedjouma and Matteo Morelli. Automated Fault Tree generation in Open-PSA from UML Models (France, 07:00-08:10)
- 324 Liqian Chen, Taoqing Chen, Guangsheng Fan and Banghu Yin. Static Analysis of Resource Usage Bounds for Imperative Programs