

## DSA 2023 Session Schedule

All the sessions are based on the time in Tokyo, Japan (UTC+9)

Conference Venue  
Building 121, Waseda University, 513 Wasedatsurumakichō, Shinjuku City, Tokyo, 162-0041 [[Map](#)]

Thursday, August 10, 2023		
08:30 – 09:00	Registration	Foyer
09:00 – 09:20 (20 minutes)	<p><b>Opening Ceremony</b></p> <ul style="list-style-type: none"> <li>• Steering Committee Chair (Host)               <ul style="list-style-type: none"> <li>– W. Eric Wong (University of Texas at Dallas)</li> </ul> </li> <li>• General Chair               <ul style="list-style-type: none"> <li>– Hironori Washizaki (Waseda University, Japan)</li> <li>– Gordon Fraser (University of Passau, Germany)</li> </ul> </li> <li>• Program Chairs               <ul style="list-style-type: none"> <li>– Rui Maranhão (University of Porto, Portugal)</li> <li>– Ying Qian (Chongqing University of Posts and Telecommunications, China)</li> </ul> </li> <li>• IEEE International Contest on Software Testing</li> </ul>	Conference Room
09:20 – 10:00 (40 minutes)	<ul style="list-style-type: none"> <li>• Keynote Speech I</li> </ul> <p style="text-align: center;"><i>Testing Autonomous Driving Functions – Current Research, Challenges, and Limitations</i></p> <p>Professor Franz Wotawa Head of the Institute for Software Technology Graz University of Technology, Austria</p>	Conference Room
10:00 – 10:40 (40 minutes)	<ul style="list-style-type: none"> <li>• Keynote Speech II</li> </ul> <p style="text-align: center;"><i>A Unification of Software Reliability Models via Non-homogeneous Markov Processes</i></p> <p>Professor Tadashi Dohi Dean of the School of Informatics and Data Science Hiroshima University, Japan</p>	Conference Room
10:40 – 11:00	• Coffee Break	Foyer
11:00 – 12:20	<ul style="list-style-type: none"> <li>• Session I-A: AI-driven Software and Applications I</li> <li>• Session I-B: Software Security</li> <li>• Session I-C: Software Testing, Verification, and Bug Reproduction</li> <li>• Session I-D: Autonomous Vehicle Software I<sup>§</sup></li> </ul>	Room 5 Room 6 Room 7 Room 8
12:20 – 13:40	• Lunch <sup>*</sup>	Rooms 5-8
13:40 – 15:40	<ul style="list-style-type: none"> <li>• Session II-A: AI-driven Software and Applications II</li> <li>• Session II-B: Predictive Modeling and Optimization I</li> <li>• Session II-C: Security for Software and Systems</li> <li>• Session II-D: International Contest on Software Testing</li> </ul>	Room 5 Room 6 Room 7 Room 8
15:40 – 16:00	• Coffee Break	Foyer
16:00 – 17:20	<ul style="list-style-type: none"> <li>• Session III-A: AI-driven Software and Applications III</li> <li>• Session III-B: Predictive Modeling and Optimization II</li> <li>• Session III-C: Blockchain, Smart Contract, and IoT</li> <li>• Session III-D: International Contest on Software Testing</li> </ul>	Room 5 Room 6 Room 7 Room 8
18:00 – 19:20	• Conference Excursion <sup>†</sup>	
19:20 – 21:20	• Conference Banquet <sup>‡</sup>	

<sup>†</sup>Each paper (except for Fast Abstract and Industry Track) has 20 minutes including Q/A.

<sup>‡</sup>Zoom links for online presentations have been provided in the detailed program.

<sup>\*</sup>The password for all video presentations link is “DSA2023”.

<sup>\*</sup>Lunch: Rooms 5, 6, 7, and 8.

†Excursion & Conference Banquet:

Address: 58th Floor, Sunshine60, 3-1, Higashiikebukuro, Toshima City, Tokyo 170-6058

Restaurant (*Sunshine Cruise Cruise*) is on the 58th Floor of Sunshine60 building.

Sunshine Observatory is on the 60th Floor of the same building.

Sunshine Aquarium is in the next building.

§Visit the [AVS website](#) for more details.

<b>Friday, August 11, 2023</b>		
08:30 – 09:00	Registration	Foyer
09:00 – 10:40	<ul style="list-style-type: none"> <li>• Session IV-A: AI-driven Software and Applications IV</li> <li>• Session IV-B: Fast Abstract &amp; Industry Track I*</li> <li>• Session IV-C: Autonomous Vehicle Software II<sup>§</sup></li> <li>• Session IV-D: Reliable Decision and Scheduling I</li> </ul>	Room 5 Room 6 Room 7 Room 8
10:40 – 11:00	• Coffee Break	Foyer
11:00 – 12:20	<ul style="list-style-type: none"> <li>• Session V-A: System Performance, Prognostics, and Health Management</li> <li>• Session V-B: Fast Abstract &amp; Industry Track II*</li> <li>• Session V-C: Autonomous Vehicle Software III<sup>§</sup></li> <li>• Session V-D: Reliable Decision and Scheduling II</li> </ul>	Room 5 Room 6 Room 7 Room 8
12:20 – 13:40	• Lunch	Rooms 5-8
13:40 – 15:40	<ul style="list-style-type: none"> <li>• Session VI-A: Reliability/Risk Modeling and Evaluation</li> <li>• Session VI-B: Dependable Intelligent Systems I</li> <li>• Session VI-C: Autonomous Vehicle Software IV<sup>§</sup></li> <li>• Session VI-D: Intelligent Software Engineering</li> </ul>	Room 5 Room 6 Room 7 Room 8
15:40 – 16:00	• Coffee Break	Foyer
16:00 – 17:40	<ul style="list-style-type: none"> <li>• Session VII-A Reliability and Testing for Artificial Intelligence Systems</li> <li>• Session VII-B: Dependable Intelligent Systems II</li> <li>• Session VII-C: Autonomous Vehicle Software V<sup>§</sup></li> </ul>	Room 5 Room 6 Room 7

\*Each Fast Abstract and Industry Track paper has 10 minutes including Q/A.

+Zoom links for online presentations have been provided in the detailed program.

\*The password for all video presentations link is “DSA2023”.

§Visit the [AVS website](#) for more details.

**DSA 2023 Presentation Schedule: Day 1**  
**All the sessions are based on the time in Tokyo, Japan (UTC+9)**

**Thursday, August 10, 2023 (11:00 – 12:20)**

**Session I-A: AI-driven Software and Applications I (4 papers)**

Location: Room 5

Chair: Franz Wotawa

- DVTest: Deep Neural Network Visualization Testing Framework
- A Comprehensive Evaluation of Q-Learning Based Automatic Web GUI Testing
- Adversarial Sample Detection for BERT Model Based on Sample Sensitivity Characteristics
- Study on automatic code summary generation method based on graph neural network ([video](#))

**Session I-B: Software Security (4 papers)**

Location: Room 6

Chair: Bixin Li

- Evaluating the Resilience of Software Architecture Based on Minimal Path
- Empirical Study on Secure Software Development
- Patch management planning - towards one-to-one policy
- A Software Security Testing Model for Autonomous Systems ([video](#))

**Session I-C: Software Testing, Verification, and Bug Reproduction (5 papers)**

Location: Room 7

Chair: Tadashi Dohi

- Towards High-Quality Test Suite Generation with ML-Based Boundary Value Analysis
- A Review of Metamorphic Relation Representation Forms
- Modelling Android applications through static analysis and systematic exploratory testing
- Towards Using Structural Abstraction for Model Checking
- Towards Effective Bug Reproduction for Mobile Applications

**Session I-D: Autonomous Vehicle Software I\* (AVS)**

Location: Room 8

Chair: Zijiang Yang and Nan Ma

- AVS Opening Ceremony
- Towards Human-centered Automated Driving
- Research on Interactive Cognition in Coordination between Human-Vehicle-Road for unmanned vehicle
- Coordination and Control of Autonomous Robot Systems
- Exploring Trustworthy Decision-making and Control for Autonomous Driving: A Constrained Dynamics Approach

\*More details can be found at the [AVS website](#).

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**Thursday, August 10, 2023 (13:40 – 15:40)**

**Session II-A: AI-driven Software and Applications II (6 papers)**

Location: Room 5

Chair: Mohammad Zulkernine

- HyperFed: Free-riding Resistant Federated Learning with Performance-based Reputation Mechanism and Adaptive Aggregation using Hypernetworks
- Activity-based modeling strategy for reliable machine learning system analysis targeting GUI-based applications
- Automated Pricing-based Provisioning of SDN/NFV Services in Distributed Multi-access Edge Computing using Cooperative Multi-Agent Deep Reinforcement Learning
- Real-time Fruit Detection Method Based on RGB-D Image Fusion
- Research on Label Distribution Dimension Reduction Algorithm Based on MLDA ([video](#))
- An Attention Mechanism Based Approach for Multivariate Time Series Anomaly Detection ([video](#))

### Session II-B: Predictive Modeling and Optimization I (7 papers)

Location: Room 6

Chair: Tadashi Dohi

- Anti-sea Operation Knowledge Modeling of Aircraft Carrier Formation Based on Key Knowledge and Symbiotic Relationship of Conditions
- Another Look at Non-homogeneous Markovian Software Reliability Modeling
- Dynamic assignment of multi-UAV marine search and rescue missions under the condition of intelligence support
- Optimizing Named Entity Recognition for Improving Logical Formulae Abstraction from Technical Requirements Documents
- Knowledge Representation and Reasoning of Strong System Confrontation Process Based on Spatio-Temporal Event Evolution Information Flow and Software
- Validity analysis of software defect prediction model for mis-label correction based on cleanlab ([video](#))
- Research on Aggregation of Federated Model for Software Defect Prediction Based on Dynamic Selection ([video](#))

### Session II-C: Security for Software and Systems (7 papers)

Location: Room 7

Chair: Bixin Li

- Secure 3rd party software integration
- Achieving Cyber-Informed Engineering Through Bayesian Belief Network And Sensitivity Analysis
- Single and Combined Cyberattack Impact on Industrial Wastewater Systems
- Employing Redundancy to Leverage Cybersecurity Protection of Safety-Critical Systems
- Data Leashing: Towards a characterization of the problem and its solution
- A comprehensive and credible assessment method for model adversarial robustness under modulated signal identification ([video](#))
- Analyzing Software Supply Chain Security Risks in Industrial Control System Protocols: An Open SSF Scorecard Approach ([video](#))

### Session II-D: International Contest on Software Testing

Location: Room 8

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**Thursday, August 10, 2023 (16:00 – 17:20)**

### Session III-A: AI-driven Software and Applications III (4 papers)

Location: Online

Chair: Zizhao Chen

Zook Link: <https://us06web.zoom.us/j/85862059609?pwd=UWxNYkZ4WFhJanpGWVVRMbFhtdFIHZz09>

- An Unsupervised Deep Learning Approach for Health Assessment of Distributed Systems
- Research on Deep Learning-Based SAR Image Denoising Algorithm
- Research and Application of Loitering Detection Based on Deep Learning
- A Click-through Rate Prediction Method Based on Interaction Features Extraction for High-dimensional Sparse Data

### Session III-B: Predictive Modeling and Optimization II (4 papers)

Location: Room 6

Chair: Ying Qian

- A Priority-based Dynamic Chain Operation Planning Model
- A Software Execution Data Component Identification Algorithm Based on Spectral Clustering
- A Quantitative analysis method for model uncertainty based on Verification, Validation, and Uncertainty Quantification
- An Adaptive Learning Feature Model Validation Methodology Based on Formal Methods ([video](#))

[Session III-C: Blockchain, Smart Contract, and IoT \(3 papers\)](#)

Location: Room 7

Chair: Hiroyuki Okamura

- [Move Smart Contract Vulnerability Detection Based on Resource-flow Analysis](#)
- [An Enhanced Approach for RFID Reader Deployment in Industrial IoT Systems with Collision Avoidance and Optimized Coverage](#)
- [Blockchain-based Model for Privacy-enhanced Data Sharing](#) ([video](#))

[Session III-D: International Contest on Software Testing](#)

Location: Room 8

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**DSA 2023 Presentation Schedule: Day 2**  
**All the sessions are based on the time in Tokyo, Japan (UTC+9)**

**Friday, August 11, 2023 (09:00 – 10:40)**

**Session IV-A: AI-driven Software and Applications IV (3 papers)**

Location: Room 5

Chair: Chin-Yu Huang

- A Systematic Mapping Study of Digital Twins for Diagnosis in Transportation
- Using the Deep Learning-Based Approaches for Program Debugging and Repair
- Spatio-Temporal Rule Constraint Guided Safe Reinforcement Learning for CPS (video)

**Session IV-B: Fast Abstract & Industry Track I\* (6 papers)**

Location: Room 6

Chair: Wen-Tin Lee

- Task Allocation of Multi UAV Based on Genetic Algorithm
- Visual Feedback Using VR Patient Avatar in Care and Nursing Training Environments
- A High Availability Microservices Architecture Implementation using Saga and Backup Mechanism
- Containerized Microservices Deployment Approach based on Ant Colony Optimization
- A Robust and High-Performance Flip-Flop with Complete Soft-Error Recovery
- Assessment of Real-World Incident Detection Through a Component-Based Online Log Anomaly Detection Pipeline Framework

\*Each paper of Fast Abstract and Industry Track has 10 minutes including Q/A.

**Session IV-C: Autonomous Vehicle Software II\* (AVS) (5 papers)**

Location: Room 7

Chair: Nan Ma and Fumito Kuroyanagi

- Image Transmission based on semantics communication in Vehicle-Infrastructure Collaboration System
- Spatial-Temporal Hypergraph Neural Network based on Attention Mechanism for Multi-view Data Action Recognition
- Evaluation of Wireless Deauthentication Attacks and Countermeasures on Autonomous Vehicles
- Evaluation of Man-in-the-Middle Attacks and Countermeasures on Autonomous Vehicles
- An Automatic Sensing Weakness Detection Method For Autonomous Vehicle Assessment

\*More details can be found at the AVS website.

**Session IV-D: Reliable Decision and Scheduling I (RDS) (5 papers)**

Location: Online

Chair: Yuewei Wang

Zook Link: <https://us06web.zoom.us/j/86841074982?pwd=U0xkNGJ6MmF2ZVZ4Rkg5anJObE5hUT09>

- Research on Resilience of Maritime Distributed Combat Network Under Targeted Attacks
- A Method for Evaluating the Effectiveness of Combat Plans Based on Matter-element Extension Model with Variable Weight
- Research on Multi-agent PPO Reinforcement Learning Algorithm based on Knowledge graph
- Chat-EasyEdu: An Education Field Intelligent Question-Answering System Based on Knowledge Graphs
- A Stacking-Based Heart Disease Classification Prediction Model

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**Friday, August 11, 2023 (11:00 – 12:20)**

**Session V-A: System Performance, Prognostics, and Health Management (4 papers)**

Location: Room 5

Chair: Franz Wotawa

- Health Trend Prediction of Rolling Bearings using Transferable Autoregressive Recurrent Adaptation Approach
- Performance degradation assessment of rolling bearing based on difference of eigenvalues in random matrix theory

- Reliability analysis for thin film thermocouple thermal oxidation failure based on interlayer diffusion
- Software Countermeasures against DVFS fault Attack for AES ([video](#))

#### Session V-B: Fast Abstract & Industry Track II\* (7 papers)

Location: Room 6

Chair: Shin-Jie Lee

- Robust Model for Adversarial Attack Protection through Weak Features Removal
- A Multiple-Criteria Ensemble Weight Strategy to Increase the Effectiveness of Deep Learning-based Fault Localization
- An Empirical Evaluation of the Effectiveness of Spider and Proxy Modes for Web Security Testing
- Automatic Detection of Abstract–Concrete Relationships between Attack Patterns of ATT&CK and CAPEC with Fine-tuned BERT
- UTEMS: A Unit Testing Scheme for Event-driven Microservices
- Towards Integrated Model-Based Machine Learning Experimentation Framework
- The Impact of ChatGPT on Software Engineering Education: A Quick Peek ([video](#))

\*Each paper of Fast Abstract and Industry Track has 10 minutes including Q/A.

#### Session V-C: Autonomous Vehicle Software III (AVS) (6 papers)

Location: Online

Chair: Xinjie Zhang and Yongqiang Yao

Zoom Link: <https://us06web.zoom.us/j/88566051814?pwd=UkszRGRJVF15REVISysY01Eb3k1Zz09>

- An Easy-portable Displacement-offset-based Trajectory Prediction Method for Autonomous Vehicles
- Prediction of Autonomous Vehicle Trajectories in Turnaround Scenarios
- Towards a Benchmark for Trajectory Prediction of Autonomous Vehicles
- BIR-AHC: Balanced Iterative Reducing and Agglomerative Hierarchical Clustering for Stair Detection
- Employing Deep Unsupervised Learning Method to Identify Testing Scenarios for Automated Vehicles
- Automated Labelling of Traffic Police Data Based on Weak Supervision

#### Session V-D: Reliable Decision and Scheduling II (RDS) (4 papers)

Location: Online

Chair: Yuewei Wang

Zoom Link: <https://us06web.zoom.us/j/89536126654?pwd=ck5vVGloWjFFYzE3MHFCUmZLQVRzQT09>

- Research on Decision Assistant Software for Ship Aircraft Collaborative Search and Rescue
- An improved  $H_\infty$  filtering based on information attack over discrete linear systems
- QA4C: An Intelligent Question and Answering System for the C Programming Language Based on Knowledge Graph
- A Research on the Factors Influencing Cyberchondria from the Perspective of Online Health Information Seeking

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### Friday, August 11, 2023 (13:40 – 15:40)

#### Session VI-A: Reliability/Risk Modeling and Evaluation (5 papers)

Location: Room 5

Chair: Xiao Xiao

- Software Reliability Modeling Based on Zero-truncated and/or Zero-inflated Compound Distributions
- Maintainability Assessment for SOFL Formal Specifications
- Application of mathematical quantification theory class III in software effort prediction
- Analyzing Residual Risks when Introducing Monitoring and Diagnosis into Systems
- Availability modeling and evaluation of switches and data centers

#### Session VI-B: Dependable Intelligent Systems I (DeIS) (5 papers)

Location: Room 6

Chair: Xiaoyi Zhang

- Senti-EGCN: An Aspect-Based Sentiment Analysis System Using Edge-Enhanced Graph Convolutional Networks
- A Note on Optimal Retraining Strategy for ML Systems
- An Investigation of the Behaviors of Machine Learning Agents Used in the Game of Go

- Using Complex Network Communities to Evaluate the Correctness of Object Detection
- An Empirical Study of Fault Detection Effectiveness of Metamorphic Testing for Object Detectors

#### Session VI-C: Autonomous Vehicle Software IV (AVS) (6 papers)

Location: Online

Chair: Weida Wang and Qin Xia

Zoom Link: <https://us06web.zoom.us/j/89930284932?pwd=MUJzWitMYWcw2c5dXVxTIBZcGN0QT09>

- A Visualization-aware Loss for Point Cloud Comparison
- Autonomous and Security-Aware Dynamic Vehicular Platoon Formation
- Two-Stream (2+1) D CNN Based on Frame Difference Attention for Driver Behavior Recognition
- Lane-Changing Decision-Making Method for Autonomous Vehicles Considering Multi-Vehicle Interactions
- Research on intelligent monitoring method of medicine delivery vehicle
- Study on Roll Oscillation Phenomenon and Controller Design of Deflection-based Flying Vehicles

#### Session VI-D: Intelligent Software Engineering (ISE) (4 papers)

Location: Online

Chair: Yong Wang

Zoom Link: <https://us06web.zoom.us/j/85178569592?pwd=WVVNUEZndDdBdVVzeXRtV3VteWFWQT09>

- Prototypical Networks with Dual Attention and Regularization for Few-Shot Relation Classification
- Application in Student Performance Prediction Using Graph Regularization Nonnegative Matrix Factorization
- A RFID-Based Smart Socket Design
- Data Intelligence Empowering Libraries: Research on Discipline-Specific Precision Services

### Friday, August 11, 2023 (16:00 – 17:40)

#### Session VII-A Reliability and Testing for Artificial Intelligence Systems (RTAIS) (5 papers)

Location: Online

Chair: Xingya Wang

Zoom Link: <https://us06web.zoom.us/j/83967204367?pwd=WTNlbFhoRkIzWmdlYUMybjJMN1B4dz09>

- An Evaluation Method for Large Language Models' Code Generation Capability
- Assessing ChatGPT's Comprehension of Perturbed Text through Text Linguistic Features
- Improving Accuracy of Small Object Detection in Screen based on YOLOv7
- An Intelligent Labeling and Dataset Generating Method for Desktop Application Element Object Detection
- Fault detection method for closed-loop control loop of water jet propulsion device based on random forest

#### Session VII-B: Dependable Intelligent Systems II (DeIS) (4 papers)

Location: Room 6

Chair: Xiaoyi Zhang

- Tool Development of Daubechies Wavelet Estimation for Stochastic Counting Processes
- On the Effectiveness of Graph Data Augmentation for Source Code Learning
- Convolutional Neural Network based Digital Twin of Rolling Bearings for CNC Machine Tools in Cloud Computing ([video](#))
- Fault Location and Separation Method of Distributed Inertial Measurement Units based on IAC ([video](#))

#### Session VII-C: Autonomous Vehicle Software V (AVS) (2 papers)

Location: Room 7

Chair: Zijiang Yang and Nan Ma

- Profile Dynamic Memory Allocation in Autonomous Driving Software
- ChatGPT Integration in AVS: Opportunities and Challenges