Donghwan Shin

Senior Lecturer (Associate Professor), School of Computer Science, University of Sheffield, UK
211 Portobello Street, Sheffield, S1 4DP, UK · +44 114 222 1854 · d.shin@sheffield.ac.uk · dshin.info

EMPLOYMENT AND EDUCATION

Jan 2026 – present **University of Sheffield**
Senior Lecturer (Associate Professor) in Testing
School of Computer Science

Aug 2022 – Dec 2025 **University of Sheffield**
Lecturer (Assistant Professor) in Testing
School of Computer Science

Nov 2020 – Jul 2022 **SnT, University of Luxembourg**
Research Scientist
Software Verification and Validation (SVV) group
Group head: Lionel Briand

Aug 2018 – Oct 2020 **SnT, University of Luxembourg**
Postdoctoral Researcher
Software Verification and Validation (SVV) group
Group head: Lionel Briand

Mar 2018 – Jul 2018 **KAIST**
Postdoctoral Research Associate

Sep 2012 – Feb 2018 **KAIST**
Ph.D. in School of Computing (Software Engineering Lab)
Thesis: *Diversity-aware Mutation Adequacy Criterion for Improving the Fault Detection Capability of Test Suites*
Supervisor: Doo-Hwan Bae

Sep 2010 – Aug 2012 **KAIST**
M.S. in Computer Science (Software Engineering Lab)
Thesis: *Empirical Evaluation on FBD Model-Based Test Coverage Criteria using Mutation Analysis*
Supervisor: Doo-Hwan Bae

Feb 2006 – Aug 2010 **KAIST**
B.S. in Computer Science

RESEARCH INTERESTS

- Testing for autonomous systems (e.g. autonomous driving systems)
- Software testing (test coverage criteria, regression testing, and fault localisation)
- Mutation testing (mutation adequacy criteria, mutation analysis)
- Log analysis (log parsing, log-based anomaly detection, model inference)

PUBLICATIONS

Google Scholar h-index 20, 1,421 citations (22 June 2026)

Refereed Journal Publications (18)

[j18] **A Comprehensive Empirical and Theoretical Analysis of Batching Algorithms for Efficient, Safe, Parallel Mutation Analysis in Rust**
Zalán Lévai, **Donghwan Shin**, Phil McMinn
ACM Transactions on Software Engineering and Methodology, 2026

[j17] **Simulation Nondeterminism and Its Impact on Flaky Tests for Autonomous Driving Systems**
Olek Osikowicz, Phil McMinn, **Donghwan Shin**
Automated Software Engineering, 2026 (just accepted)

[j16] **Automated Testing of Prevalent 3D User Interactions in Virtual Reality Applications**
Ruizhen Gu, José Miguel Rojas, **Donghwan Shin**
Automated Software Engineering, 33 (3), 2026

[j15] **Software Testing for Extended Reality Applications: A Systematic Mapping Study**
Ruizhen Gu, José Miguel Rojas, **Donghwan Shin**
Automated Software Engineering, 32 (2), 2025

[j14] **Impact of Log Parsing on Deep Learning-based Anomaly Detection**
Zanis Ali Khan, **Donghwan Shin**, Domenico Bianculli, Lionel Briand
Empirical Software Engineering, 29 (6), 2024

[j13] **Systematic Evaluation of Deep Learning Models for Log-based Failure Prediction**
Fatemeh Hadadi, Joshua H Dawes, **Donghwan Shin**, Domenico Bianculli, Lionel Briand
Empirical Software Engineering, 29 (5), 2024

[j12] **Virtual Environment Model Generation for CPS Goal Verification using Imitation Learning**
Yong-Jun Shin, **Donghwan Shin**, Doo-Hwan Bae
ACM Transactions on Embedded Computing Systems, 23 (1), 2024

[j11] **Rigorous Assessment of Model Inference Accuracy using Language Cardinality**
Donato Clun, **Donghwan Shin**, Antonio Filieri, Domenico Bianculli
ACM Transactions on Software Engineering and Methodology, 33 (4), 2024

[j10] **An extensible modeling method supporting ontology-based scenario specification and domain-specific extension**
Young-Min Baek, Esther Cho, **Donghwan Shin**, Doo-Hwan Bae
International Journal of Software Engineering and Knowledge Engineering, 34 (1), 2024

[j9] **Identifying the Hazard Boundary of ML-enabled Autonomous Systems Using Cooperative Co-Evolutionary Search**
Sepehr Sharifi, **Donghwan Shin**, Lionel C Briand, Nathan Aschbacher
IEEE Transactions on Software Engineering, 49 (12), 2023

[j8] **PRINS: Scalable Model Inference for Component-Based System Logs**
Donghwan Shin, Domenico Bianculli, Lionel Briand
Empirical Software Engineering, 27 (4), 2022

[j7] **Can Offline Testing of Deep Neural Networks Replace Their Online Testing?**
Fitash Ul Haq, **Donghwan Shin**, Shiva Nejati, Lionel Briand
Empirical Software Engineering, 26 (5), 2021

[j6] **Empirical Evaluation of Mutation-based Test Case Prioritization Techniques**
Donghwan Shin, Shin Yoo, Mike Papadakis, Doo-Hwan Bae
Software Testing, Verification and Reliability, 29 (1-2): e1695, 2019

[j5] **A Theoretical and Empirical Study of Diversity-aware Mutation Adequacy Criterion**
Donghwan Shin, Shin Yoo, Doo-Hwan Bae
IEEE Transactions on Software Engineering, 44 (10), 2018

[j4] **Comprehensive Analysis of FBD Test Coverage Criteria using Mutants**
Donghwan Shin, Eunkyoung Jee, Doo-Hwan Bae
Software & Systems Modeling, 15 (3), 2016

[j3] **Human Resource Allocation in Software Project with Practical Considerations**
Jihun Park, Dongwon Seo, Gwangui Hong, **Donghwan Shin**, Jimin Hwa, Doo-Hwan Bae
International Journal of Software Engineering and Knowledge Engineering, 25 (1), 2015

[j2] **Automated Test Case Generation for FBD Programs Implementing Reactor Protection System Software**
Eunkyoung Jee, **Donghwan Shin**, Sungdeok Cha, Jang-Soo Lee, Doo-Hwan Bae
Software Testing, Verification and Reliability, 24 (8), 2014

[j1] **Identification of Quality Improvement Strategies using COPQ in Software Industry**
Yeong-Seok Seo, **Donghwan Shin**, Gookhyun Kim, Jongmoon Baik, Doo-Hwan Bae
International Journal of Performability Engineering, 8 (6), 2012

Refereed Conference and Symposium Publications (31)

[c31] **Branch-Level Fault Localization in ADS Planning via Temporal Coverage Analysis**
Sangmin Woo, Dohyun Kim, **Donghwan Shin**, Yongdae Kim
ACM SIGSOFT International Symposium on Software Testing and Analysis (ISSTA 2026)

[c30] **Evolution-Aware Regression Test Prioritization of ML-Enabled Systems Using Gradient-Based Behavior Vectors**
Eunho Cho, **Donghwan Shin**, In-Young Ko
IEEE/ACM International Conference on Automated Software Engineering (ASE 2026)

[c29] **DT-Drive: A Tool for Deterministic Replay-Based Testing and Debugging of Autonomous Driving Systems**
Sanjeetha Pennada, Matthew Leach, Olek Osikowicz, **Donghwan Shin**
ASE 2026 Tools and Demonstrations Track

[c28] **Dynamic Mutation Scheduling: Highly Parallel, Efficient Evaluation of Mutations for Rust Programs through Program Splitting**
Zalán Lévai, **Donghwan Shin**, Phil McMinn
IEEE International Conference on Software Testing, Verification and Validation (ICST 2026)

[c27] **mutest-rs: Flexible, Efficient Mutation Analysis Tool for Rust Programs, using Extensive Static Analysis**
Zalán Lévai, **Donghwan Shin**, Phil McMinn
ICST 2026 Tools and Demo Track

[c26] **Multi-Fidelity Bayesian Optimization for Simulation Based Autonomous Driving Systems Testing**
Olek Osikowicz, Phil McMinn, Wei Xing, **Donghwan Shin**
IEEE Intelligent Vehicles Symposium (IV 2026)

[c25] **Using Causal Inference to Test Systems with Hidden and Interacting Variables: An Evaluative Case Study**
Michael Foster, Robert Hierons, **Donghwan Shin**, Neil Walkinshaw, Chris Wild
International Conference on Evaluation and Assessment in Software Engineering (EASE 2025)
(Distinguished Paper Award)

[c24] **On the Promises and Challenges of AI-Powered XR Glasses as Embodied Software**
Ruizhen Gu, Jingqiong Zhang, José Miguel Rojas, **Donghwan Shin**
ACM International Conference on AI-Powered Software (AIware 2025)

[c23] **Unseen Data Detection using Routing Entropy in Mixture-of-Experts for Autonomous Vehicles**
Sang In Lee, **Donghwan Shin**, Jihun Park
ASE 2025 New Ideas and Emerging Results Track

[c22] **XRintTest: An Automated Framework for User Interaction Testing in Extended Reality Applications**
Ruizhen Gu, José Miguel Rojas, **Donghwan Shin**
ASE 2025 Tool Demonstration Track

[c21] **Can Test Generation and Program Repair Inform Automated Assessment of Programming Projects?**
Ruizhen Gu, José Miguel Rojas, **Donghwan Shin**
ICST 2025 Education Track

[c20] **Mutation-based Consistency Testing for Evaluating the Code Understanding Capability of LLMs**
Ziyu Li, **Donghwan Shin**
International Conference on AI Engineering (CAIN 2024, co-located with ICSE 2024)

[c19] **Autonomous Driving System Testing: Traffic Density Does Matter**
Guannan Lou, **Donghwan Shin**, Neil Walkinshaw, Robert M Hierons
International Conference on Testing Software and Systems (ICTSS 2024)

[c18] **Tuning the feedback controller gains is a simple way to improve autonomous driving performance**
Wenyu Liang, Ross Drummond, Pablo Baldivieso Monasterios, **Donghwan Shin**
UKACC International Conference on Control (Control 2024)

[c17] **Many-Objective Reinforcement Learning for Online Testing of DNN-Enabled Systems**
Fitash Ul Haq, **Donghwan Shin**, Lionel Briand
International Conference on Software Engineering (ICSE 2023)

[c16] **Towards Log Slicing**
Joshua Dawes, **Donghwan Shin**, Domenico Bianculli
International Conference on Fundamental Approaches to Software Engineering (FASE 2023)

[c15] **Efficient Online Testing for DNN-Enabled Systems using Surrogate-Assisted and Many-Objective Optimization**
Fitash Ul Haq, **Donghwan Shin**, Lionel Briand
International Conference on Software Engineering (ICSE 2022) **(ACM SIGSOFT Distinguished Paper Award)**

[c14] **Guidelines for Assessing the Accuracy of Log Message Template Identification Techniques**
Zanis Ali Khan, **Donghwan Shin**, Domenico Bianculli, Lionel Briand
International Conference on Software Engineering (ICSE 2022)

[c13] **Automatic Test Suite Generation for Key-Points Detection DNNs using Many-Objective Search**
Fitash Ul Haq, **Donghwan Shin**, Lionel C Briand, Thomas Stifter, Jun Wang
ACM SIGSOFT International Symposium on Software Testing and Analysis (ISSTA 2021)

[c12] **Log-based Slicing for System-level Test Cases**
Salma Messaoudi, **Donghwan Shin**, Annibale Panichella, Domenico Bianculli, Lionel C Briand
ACM SIGSOFT International Symposium on Software Testing and Analysis (ISSTA 2021)

[c11] **Digital Twins Are Not Monozygotic – Cross-Replicating ADAS Testing in Two Industry-Grade Automotive Simulators**
Markus Borg, Raja Ben Abdessalem, Shiva Nejati, François-Xavier Jegeden, **Donghwan Shin**
IEEE Conference on Software Testing, Verification and Validation (ICST 2021)

[c10] **A Theoretical Framework for Understanding the Relationship Between Log Parsing and Anomaly Detection**
Donghwan Shin, Zanis Ali Khan, Domenico Bianculli, Lionel Briand
International Conference on Runtime Verification (RV 2021)

[c9] **Comparing Offline and Online Testing of Deep Neural Networks: An Autonomous Car Case Study**
Fitash Ul Haq, **Donghwan Shin**, Shiva Nejati, Lionel C Briand
IEEE Conference on Software Testing, Verification and Validation (ICST 2020)

[c8] **Are Mutation Scores Correlated with Real Fault Detection? A Large Scale Empirical Study on the Relationship Between Mutants and Real Faults**
Mike Papadakis, **Donghwan Shin**, Shin Yoo, Doo-Hwan Bae
International Conference on Software Engineering (ICSE 2018)

[c7] **ABC+: Extended Action-Benefit-Cost Modeling with Knowledge-based Decision-making and Interaction Model for System of Systems Simulation**
Mingyu Jin, **Donghwan Shin**, Doo-Hwan Bae
ACM Symposium on Applied Computing (SAC 2018)

[c6] **A Theoretical Framework for Understanding Mutation-based Testing Methods**
Donghwan Shin, Doo-Hwan Bae
IEEE International Conference on Software Testing, Verification and Validation (ICST 2016)

[c5] **A Runtime Verification Framework for Dynamically Adaptive Multi-Agent Systems**
Yoo Jin Lim, Gwangui Hong, **Donghwan Shin**, Eunkyoung Jee, Doo-Hwan Bae
International Conference on Big Data and Smart Computing (BigComp 2016)

[c4] **Quality Based Software Project Staffing and Scheduling with Cost Bound**
Dongwon Seo, **Donghwan Shin**, Doo-Hwan Bae
Asia-Pacific Software Engineering Conference (APSEC 2015)

[c3] **Efficient Testing of Self-Adaptive Behaviors in Collective Adaptive Systems**
Yoo Jin Lim, Eunkyoung Jee, **Donghwan Shin**, Doo-Hwan Bae
IEEE Annual Computer Software and Applications Conference (COMPSAC 2015)

[c2] **Practical Human Resource Allocation in Software Projects Using Genetic Algorithm**
Jihun Park, Dongwon Seo, Gwangui Hong, **Donghwan Shin**, Jimin Hwa, Doo-Hwan Bae
International Conference on Software Engineering and Knowledge Engineering (SEKE 2014)

[c1] **Empirical Evaluation on FBD Model-based Test Coverage Criteria using Mutation Analysis**
Donghwan Shin, Eunkyoung Jee, Doo-Hwan Bae
International Conference on Model Driven Engineering Languages and Systems (MODELS 2012)

Refereed Workshop Publications (9)

[w9] **Collaborative Multi-Agent Testing for Emergent Failure Discovery in Autonomous Driving Systems**
Ruizhen Gu, Konstantinos Koufos, **Donghwan Shin**, Vahid Garousi, Mehrdad Dianati
1st Workshop on Generalization in Autonomous Driving (co-located with ICRA 2026)

[w8] **Empirically Evaluating Flaky Tests for Autonomous Driving Systems in Simulated Environments**
Olek Osikowicz, Phil McMinn, **Donghwan Shin**
International Flaky Tests Workshop (FTW 2025, co-located with ICSE 2025)

[w7] **Towards Simplification of Failure Scenarios for Machine Learning-Enabled Autonomous Systems**
Donghwan Shin, Sanjeetha Pennada
IEEE International Conference on Software Quality, Reliability and Security Companion (QRS-C 2024)

[w6] **Toward Automated Compliance Checking of Fund Activities Using Runtime Verification Techniques**
Marcello Ceci, Nicolas Sannier, **Donghwan Shin**, Sallam Abualhaija, Domenico Bianculli, Michael Halling
Workshop on Software Engineering Challenges in Financial Firms (FinanSE 2024)

[w5] **Formal Modeling and Verification of a Federated Byzantine Agreement Algorithm for Blockchain Platforms**
Junghun Yoo, Youlim Jung, **Donghwan Shin**, Minhyo Bae, Eunkyoung Jee
IEEE International Workshop on Blockchain Oriented Software Engineering (IWBOSE 2019)

[w4] **Mutation Analysis for System of Systems Policy Testing**
Wonkyung Yun, **Donghwan Shin**, Doo-Hwan Bae
Joint Workshop on SE for Systems-of-Systems (JSOS 2017)

[w3] **Diversity-Aware Mutation Adequacy Criterion for Improving Fault Detection Capability**
Donghwan Shin, Shin Yoo, Doo-Hwan Bae
International Workshop on Mutation Analysis (Mutation 2016)

[w2] **Modeling and Verification for Different Types of System of Systems using PRISM**
Dongwon Seo, **Donghwan Shin**, Young-Min Baek, Jiyoung Song, Wonkyung Yun, Junho Kim, Eunkyoung Jee, Doo-Hwan Bae
International Workshop on Software Engineering for Systems-of-Systems, 2016

[w1] **Quality Based Software Project Staffing and Scheduling with Budget and Deadline**
Dongwon Seo, **Donghwan Shin**, Doo-Hwan Bae
Workshop on Alternate Workforces for Software Engineering (WAWSE 2015), co-located with APSEC 2015

Preprints (8)

[p8] **Cleaning Logs for Downstream Tasks (Registered Report)**
Zahra G. Yazdi, Van-Hoang Le, Nyyti Saarimäki, **Donghwan Shin**, Domenico Bianculli, Lionel Briand
arXiv preprint (Registered Report), 2026, arxiv.org/abs/2606.27000

[p7] **Towards Safety-Aware Mutation Testing for Autonomous Driving Systems**
Donghwan Shin
arXiv preprint, 2026, arxiv.org/abs/2606.26456

[p6] **A Systematic Mapping Study on the Debugging of Autonomous Driving Systems**
Nathan Shaw, Sanjeetha Pennada, Robert M Hierons, **Donghwan Shin**
arXiv preprint, 2026, arxiv.org/abs/2601.04293

[p5] **Detecting Multiple Semantic Concerns in Tangled Code Commits**
Beomsu Koh, Neil Walkinshaw, **Donghwan Shin**
arXiv preprint, 2026, arxiv.org/abs/2601.21298

[p4] **Taxonomy of Software Log Smells**
Nyyti Saarimäki, **Donghwan Shin**, Domenico Bianculli
arXiv preprint, 2024, arxiv.org/abs/2412.09284

[p3] **Literature Review to Collect Conceptual Variables of Scenario Methods for Establishing a Conceptual Scenario Framework**
Young-Min Baek, Esther Cho, **Donghwan Shin**, Doo-Hwan Bae
arXiv preprint, 2022, arxiv.org/pdf/2205.08290

[p2] **Effective Removal of Operational Log Messages: an Application to Model Inference**
Donghwan Shin, Domenico Bianculli, Lionel Briand
arXiv preprint, arxiv.org/pdf/2004.07194

[p1] **Scalable Inference of System-level Models from Component Logs**
Donghwan Shin, Salma Messaoudi, Domenico Bianculli, Annibale Panichella, Lionel Briand, Raimondas Sasnauskas
arXiv preprint, arxiv.org/pdf/1908.02329

Refereed Publications in Korean (17)

[k17] **A Case Study of Modeling and Simulation of a Blockchain Consensus Algorithm**
Eunkyoung Jee, Youlim Jung, Junghun Yoo, **Donghwan Shin**, Doo-Hwan Bae
Korea Software Congress (KSC 2018), pp. 438-440

[k16] **An Applicability Study of Action-Benefit-Cost Model and Statistical Model Checking for System of Systems Goal Achievement Verification**
Junho Kim, **Donghwan Shin**, Doo-Hwan Bae
KIISE Transactions on Computing Practices, Vol. 23, No. 4, pp. 256-261, 2017

[k15] **System-of-Systems-level Goal Achievement Verification Tool**
Mingu Jin, **Donghwan Shin**, Doo-Hwan Bae
Korea Computer Congress (KCC 2017), pp. 552-554

[k14] **A Case Study for Mutation-Based Fault Localization for FBD Programs**
Donghwan Shin, Wonkyong Yun, Junho Kim, Eunkyoung Jee, Doo-Hwan Bae
KIISE Transactions on Computing Practices, Vol. 22, No. 3, pp. 145-150, 2016

[k13] **A Case Study of Action-Benefit-Cost Modeling and Statistical Model Checking for System-of-Systems Property Verification**
Junho Kim, **Donghwan Shin**, Doo-Hwan Bae
Korea Computer Congress (KCC 2016), pp. 256-261 **(Outstanding Presentation Award)**

[k12] **Lessons learned from application of model checking and testing techniques to reactor protection system software for safety assurance**
Eunkyoung Jee, **Donghwan Shin**, Doo-Hwan Bae
Communications of KIISE, Vol. 33, No. 7, pp. 15-26, 2015

[k11] **Quality-Based Software Project Staffing and Scheduling with Project Deadline**
Dongwon Seo, **Donghwan Shin**, Doo-Hwan Bae
Journal of KIISE, Vol. 42, No. 7, pp. 878-888, 2015

[k10] **Applicability of Mutation-Based Fault Localization for FBD Programs**
Donghwan Shin, Wonkyong Yun, Junho Kim, Eunkyoung Jee, Doo-Hwan Bae
Korea Computer Congress (KCC 2015), pp. 567-569 **(Outstanding Presentation Award)**

[k9] **Quality Based Software Project Staffing and Scheduling with Time Bound**
Dongwon Seo, **Donghwan Shin**, Doo-Hwan Bae
Korea Conference on Software Engineering (KCSE 2015) **(Best Paper Award)**

[k8] **Formal Verification of Self-Adaptive Healthcare System: Case Study and Analysis**
Yoo Jin Lim, **Donghwan Shin**, Eunkyoung Jee, Jihun Park, Doo-Hwan Bae
Korea Conference on Software Engineering (KCSE 2014), pp. 15-22

[k7] **Automatic Project Planning Technique and Tool Considering Practical Requirements**
Jihun Park, **Donghwan Shin**, Gwangui Hong, Dongwon Seo, Gigon Bae, Yeong-Seok Seo, Doo-Hwan Bae
Korea Conference on Software Engineering (KCSE 2014) **(Outstanding Paper Award)**

[k6] **Verification Framework for Autonomous Collaboration of Smart Devices**
Gwangui Hong, Yoo Jin Lim, Eunkyoung Jee, **Donghwan Shin**, Doo-Hwan Bae
Korea Computer Congress (KCC 2014), pp. 454-456

[k5] **Definition of Mutation Operators for FBD Models and Case Study**
Donghwan Shin, Eunkyoung Jee, Doo-Hwan Bae
Journal of KIISE: Computing Practices and Letters, Vol. 19, No. 1, pp. 36-40, 2013

[k4] **Automatic Project Planning Technique and Tool based on Software Industry Requirements**
Jihun Park, **Donghwan Shin**, Gwangui Hong, Dongwon Seo, Jimin Hwa, Gigon Bae, Yeong-Seok Seo, Doo-Hwan Bae
Journal of Software Engineering Society, Vol. 26, No. 4, pp. 77-92, 2013

[k3] **Automated Human Resource Allocation based on Practical Feedback from Software Industry**
Jimin Hwa, Jihun Park, **Donghwan Shin**, Gwangui Hong, Yeong-Seok Seo, Gigon Bae, Doo-Hwan Bae
Journal of KIISE: Software and Applications, Vol. 40, No. 7, pp. 369-380, 2013

[k2] **An Approach to Automated Human Resource Allocation including Practical Issues in Software Projects**
Jimin Hwa, Jihun Park, **Donghwan Shin**, Gwangui Hong, Yeong-Seok Seo, Gigon Bae, Doo-Hwan Bae
Korea Conference on Software Engineering (KCSE 2013), pp. 111-112 **(Best Paper Award)**

[k1] **Definition of Mutation Operators for FBD Models**
Donghwan Shin, Eunkyoung Jee, Doo-Hwan Bae
Korea Computer Congress (KCC 2012), pp. 184-186 **(Outstanding Presentation Award)**

RESEARCH PROJECTS

Mar 2026 – Feb 2027 **MF-Drive: Scalable and Sustainable Simulation-based Testing of Autonomous Vehicles using Multi-Fidelity Optimisation**
PI, funded by NVIDIA Academic Grant Program

Apr 2025 – Dec 2026 **Simulation-Based Testing for Mobility Cyber-Physical Systems of Systems**
Co-PI, funded by IITP (South Korea), with KAIST Web Engineering Lab

Jan 2024 – Dec 2026 **SimpliFaiS: Simplification of Failure Scenarios for Machine Learning-enabled Autonomous Systems**
PI, funded by EPSRC New Investigator Award

Funded Studentships

Sep 2026 – Aug 2030 **EngD: Generative AI for Scalable, Sustainable, and Trustworthy Manufacturing**
Co-supervisor of Robert Earle, funded by Rolls-Royce plc (Doctoral Training)

Sep 2024 – Feb 2028 **Search-Based Testing and Debugging for Autonomous Driving Systems in Simulated Environments**
Supervisor of Nathan Shaw, funded by EPSRC PhD Studentship

AWARDS AND HONOURS

Oct 2026 **Distinguished Reviewer Award**, ISSTA 2026
Jun 2025 **Distinguished Paper Award**, EASE 2025 [c25]
Jun 2025 **ACM SIGSOFT Distinguished Reviewer Award**, ISSTA 2025
May 2024 **IEEE Distinguished Reviewer Award**, ICSE 2024
May 2022 **ACM SIGSOFT Distinguished Paper Award**, ICSE 2022 [c15]
Sep 2019 **Postdoctoral Training Grant (Abroad)**, National Research Foundation, South Korea
Feb 2018 **Outstanding PhD Thesis Award**, School of Computing, KAIST
Sep 2016 **Outstanding Presentation Award**, KCC 2016 [k13]
Jul 2015 **Outstanding Presentation Award**, KCC 2015 [k10]
Mar 2015 **Outstanding Teaching Assistant Award**, Computer Science Dept., KAIST
Feb 2015 **Best Paper Award**, KCSE 2015 [k9]
Jan 2014 **Outstanding Paper Award**, KCSE 2014 [k7]
Mar 2013 – Feb 2015 **STX Scholarship Foundation Scholarship**, Tuition and academic grant for PhD studies
Jan 2013 **Best Paper Award**, KCSE 2013 [k2]
Jul 2012 **Outstanding Presentation Award**, KCC 2012 [k1]

Sep 2011 **Outstanding Teaching Assistant Award**, Computer Science Dept., KAIST
Mar 2011 – Aug 2012 **STX Scholarship Foundation Scholarship**, Tuition and academic grant for MS studies
Mar 2007 – Aug 2010 **KAIST CS Scholarship**, Merit-based scholarship for 8 semesters
Sep 2006 – Aug 2010 **Shinhan Scholarship Foundation Scholarship**, Tuition and academic grant for BS studies

INVITED TALKS

2026 *Test-Driven Autonomy: Finding and fixing system-level failures in AI-enabled autonomous systems*, School of Computing Seminar
2026 *Simulation-based Testing and Debugging for Autonomous Driving Systems*, Centre for Assuring Autonomy (University of York)
2024 *Testing of ML-enabled Autonomous Systems*, School of Computing Seminar, KAIST
2023 *Testing for ML-enabled Automated Driving Systems*, ARM Sheffield

COMMUNITY SERVICE

Editorial Roles

- Editorial Board Member, Software Testing, Verification and Reliability (STVR)
- Editorial Board Member, Journal of Systems and Software (JSS)
- Guest Editor, EMSE Special Issue on Innovations in Software System Testing with Deep Learning (2023)
- Guest Editor, STVR Special Issue from the Mutation Workshop (2023)

Organising Committees

- Student Volunteer Co-chair, ICST 2026
- Co-organiser, DeepTest 2023 (ICSE 2023)
- Co-organiser, Mutation 2022 and 2023 (ICST)
- Student Volunteer Co-chair, ISSTA 2022
- Social Media Co-chair, ICSE 2020

Program Committees

2027 ICSE, ICST
2026 ISSTA, ASE, ITSC, DeepTest, ICST Industry, ICST Tools & Data, APSEC Tool Demos, APSEC Doctoral Symposium
2025 ISSTA, ICSE Demo, ASE Tutorials, Mutation, ITEQS, SESoS, ICST Tools & Data
2024 ICSE, ICST, SCAM, FSE Posters, ICSE Demo, SSBSE HOP, QUATIC, TestADS, Mutation, SESoS
2023 ASE, ICST, APSEC ERA
2022 ICST, ISSRE
2019–2021 ICSE SEIP, Mutation, SEA4DQ, IBF

Reviewer

- ACM Computing Surveys (CSUR)
- ACM Transactions on Software Engineering and Methodology (TOSEM)
- Computer Networks (COMNET)
- Empirical Software Engineering (EMSE)
- IEEE Access
- IEEE Transactions on Industrial Informatics (TII)
- IEEE Transactions on Intelligent Transportation Systems (T-ITS)
- IEEE Transactions on Software Engineering (TSE)
- IET Software
- Information Processing Letters (IPL)
- Journal of Systems and Software (JSS)
- Software Quality Journal (SQJ)
- Software Testing, Verification and Reliability (STVR)
- EPSRC Peer Review College

RESEARCH SUPERVISION

Sep 2023 – present **Olek Osikowicz** (primary supervisor; co-supervisor: Phil McMinn)
PhD student, University of Sheffield: Efficient simulation-based testing for autonomous vehicles using multi-fidelity fusion

Sep 2024 – present **Nathan Shaw** (primary supervisor; co-supervisor: Rob Hierons)
PhD student, University of Sheffield: Testing and debugging autonomous vehicles in simulated environments

Sep 2022 – present **Guannan Lou** (second supervisor; primary supervisor: Rob Hierons)
PhD student, University of Sheffield: Simulation-based ADS testing with traffic densities and gradient optimisation

Sep 2023 – present **Zalán Lévai** (second supervisor; primary supervisor: Phil McMinn)
PhD student, University of Sheffield: Mutation testing for Rust

Sep 2025 – present **Rimsha Chaudhry** (second supervisor; primary supervisor: Phil McMinn)
PhD student, University of Sheffield: Test flakiness

Sep 2026 – present **Robert Earle** (co-supervisor, with Narcisa Pinzariu (first) and Jon Stammers)
EngD student, University of Sheffield: Generative AI for scalable, sustainable, and trustworthy manufacturing (EngD, Rolls-Royce)

Alumni

Sep 2022 – Jun 2026 **Ruizhen Gu** (second supervisor; primary supervisor: José Miguel Rojas)
PhD student, University of Sheffield → Research Fellow, Queen's University Belfast

Feb 2019 – Nov 2022 **Fitash Ul Haq** (second supervisor; primary supervisor: Lionel Briand)
PhD student, University of Luxembourg → Research Scientist, LIST

Apr 2020 – Feb 2024 **Zanis Ali Khan** (second supervisor; primary supervisor: Domenico Bianculli)
PhD student, University of Luxembourg → Research Scientist, LIST

Aug 2018 – Jun 2021 **Salma Messaoudi** (second supervisor; primary supervisor: Lionel Briand)
PhD student, University of Luxembourg → Cyber Security Engineer, SOGETI Luxembourg

TEACHING

Feb 2023 – present **Introduction to Software Engineering** (Lecturer; Team Project Lead)
Undergraduate course, School of Computer Science, University of Sheffield

Feb 2023 – present **Software Reengineering** (Lecturer)
Undergraduate/Master course, School of Computer Science, University of Sheffield

Sep 2022 – present **UG/PGT Dissertation Projects** (Supervisor)
Undergraduate/Master course, School of Computer Science, University of Sheffield

Feb 2013 – Dec 2014 **Computer Science Project** (Teaching Assistant)
Undergraduate course, Computer Science, KAIST

Sep 2011 – Dec 2011 **Formal Languages and Automata** (Teaching Assistant)
Undergraduate course, Computer Science, KAIST

Feb 2011 – Aug 2011 **Introduction to Software Engineering** (Teaching Assistant)
Undergraduate course, Computer Science, KAIST

Sep 2010 – Dec 2010 **Operating Systems** (Teaching Assistant)
Undergraduate course, Computer Science, KAIST