

Olek Osikowicz

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Education

- PhD** **University of Sheffield**, School of Computer Science Sheffield, UK
• *Efficient and reliable simulation-based Autonomous Driving Systems testing* Sept 2023 – present
• PhD Supervisors: *Donghwan Shin & Phil McMinn*
- BSc** **University of Sheffield**, Computer Science Sheffield, UK
• Graduated with first-class honours, Dissertation: *Grounded In Reality Autonomous Driving Systems Testing* Sept 2020 – June 2023
• Supervisor: *Phil McMinn*

Research Projects

Representation Learning for Simulation-Based Testing

- Implemented a Variational Auto-encoder (VAE) in PyTorch to learn latent representations of driving scenarios
- Optimized generative sampling to enable efficient search for critical edge-case behaviors in latent space
- Explored motion sequence modeling with Transformers; treated driving scenes as a next-token prediction task

Multi-Fidelity Optimization for Driving Simulators

- Designed Multi-Fidelity Bayesian Optimization algorithms for testing driving agents in physical simulations
- Reduced model evaluation costs by 16.8% with data-driven surrogate modelling and optimal sampling
- Maximized information gain on model behavior while minimizing simulation costs by varying simulator fidelity

Flaky tests in Simulation-Based Driving Evaluation

- Empirically analysed "False Fails" caused by simulator nondeterminism in autonomous agent verification
- Identified that 31% of scenarios can exhibit flakiness, publishing mitigation guidelines for reliable benchmarking
- Presented findings on simulation reliability at the International Flaky Tests Workshop (FTW 2025)

Scalable ML Infrastructure

- Distributed model data collection on a scalable infrastructure to improve ML experiment throughput
- Designed and deployed a multi-node computing cluster using Ray actors & AWS EC2 distributing agent evaluations
- Significantly accelerated computational experiments in autonomous driving testing research group

Publications

- Multi-Fidelity Bayesian Optimization for Simulation-Based Autonomous Driving Systems Testing** June 2026
Olek Osikowicz, Phil McMinn, Wei Xing, Donghwan Shin
Accepted at *2026 IEEE Intelligent Vehicles Symposium (IV 2026)*
- CAWSR: Carla-AutoWare Scenario Runner** Jan 2026
David Gasinski, **Olek Osikowicz**, Gwilym Rutherford, Donghwan Shin
github.com/Intelligent-Testing-Lab/cawsr Under review at *Journal of Open Source Software (JOSS)*
- Simulation Nondeterminism and Its Impact on Flaky Tests for Autonomous Driving Systems** Jan 2026
Olek Osikowicz, Phil McMinn, Donghwan Shin
Under review at *Automated Software Engineering (ASE) Journal*
- Empirically Evaluating Flaky Tests for Autonomous Driving Systems in Simulated Environments** Apr 2025

Olek Osikowicz, Phil McMinn, Donghwan Shin

[10.1109/FTW66604.2025.00009](https://doi.org/10.1109/FTW66604.2025.00009) [↗](#) 2025 IEEE/ACM International Flaky Tests Workshop (FTW 2025)

Employment

- University of Sheffield**, Research Assistant in Simulation-Based Testing Sheffield, UK
June 2025 – present
- Collaborating with **KAIST (Korea Advanced Institute of Science and Technology)**
 - Developing automated Python tooling for large-scale ADS simulation and testing
- Dover Fueling Solutions**, Data Engineering Intern Kraków, Poland
June 2022 – Sept 2022
- Built batched ETL data pipelines on MS Azure to process & clean large-scale datasets
 - Joined datasets via SQL warehouses on Databricks supporting analytics & modelling

Skills

Programming: Python (advanced), C++, SQL, TypeScript, React Native, Svelte

Distributed computing: Multiprocessing, Ray, Docker, AWS (EC2/S3), GCP, SLURM, with Loki, Prometheus, Grafana

Machine Learning: PyTorch, Generative Models (VAEs), Bayesian Optimization, Reinforcement Learning

Languages: English (fluent), Polish (native), German (intermediate), Spanish (basic)

Teaching

Software Re-Engineering [↗](#) Mar 2024 – present
Supporting undergraduate and master's students in re-engineering real-world Python projects

Introduction to Algorithms and Data Structures [↗](#) Feb 2023 – June 2023
Running tutorial sessions for first-year students, explaining the principles of modern algorithms and data structures

Awards

NVIDIA Academic Grant (Robotics & Edge AI) Mar 2026

- Supporting MF-Drive project addressing the critical trade-off between scalability and fidelity in AV testing
- Hardware valued **£58,000**: NVIDIA DRIVE AGX Thor, RTX PRO 6000 Blackwell, and 32K A100 GPU-hours

Best teaching support award by School of Computer Science July 2025

- Recognition of excellence in teaching support as a Graduate Teaching Assistant in Software Re-engineering
- Awarded by Head of School in the 2024/25 academic year

University of Sheffield Billy Ibberson Bursary Feb 2025

- Secured a competitive £1,771 grant for travel expenses and research training
- Awarded to support research that develops links between academic innovation and industrial practice

Software Hut Prize June 2023

- Awarded for the best software delivery to a real-world client
- Recognized for excellence in Agile development and effective team collaboration

Service

Facilitator, Alan Turing Institute PhD Student Presentations & Networking Day Feb 2026

- Assisted in organising the event, welcomed guests, and moderated Q&A sessions following each presentation

Reviewer, Artifact Evaluation Committee Member for ESOP, FASE and FoSSaCS Jan 2026

- Reviewed and evaluated research artifacts for reproducibility

Student Volunteer, International Conference on Software Engineering (ICSE 2025) Apr 2025

- Assisted in organizing and managing conference sessions and events