Olek Osikowicz

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Education

PhD **University of Sheffield**, School of Computer Science — Sheffield, UK, Sept 2023 – present
- Efficient and reliable simulation-based Autonomous Driving Systems testing
- *PhD Supervisors: Donghwan Shin & Phil McMinn*

BSc **University of Sheffield**, Computer Science — Sheffield, UK, Sept 2020 – June 2023
- Graduated with **First-Class Honours**
- Dissertation: *Grounded In Reality Autonomous Driving Systems Testing*

Current Projects

Distributed ML infrastructure
- Designed and deployed a multi-node computing cluster using Ray to parallelize software-in-the-loop evaluations
- Significantly improved the throughput of ML evaluation experiments in testing research group

Multi-Fidelity Test Generation
- Designed Multi-Fidelity Bayesian Optimization algorithms for Autonomous Driving Systems (ADS) testing
- Reduced costs of driving models evaluation by 16.8% compared to state-of-the-art baselines

Variational Autoencoder (VAE) for Driving Scenarios
- Implemented a deep learning pipeline to learn compact latent representations of driving scenarios
- Designed, trained and evaluated the model enabling efficient sampling of driving scenarios for ADS testing

Flaky Test Analysis for ADS
- Empirically discovered and analysed the causes of flaky tests in simulation-based ADS testing
- Reported and published mitigation guidelines to reduce the impact of flaky tests on ADS verification

Employment

University of Sheffield, Research Assistant in Simulation-Based Testing — Sheffield, UK, June 2025 – present
- Developing automated Python tooling for large-scale ADS simulation and testing
- Project: "Simulation-Based Testing for Mobility Cyber-Physical Systems of Systems"

Dover Fueling Solutions, Summer Intern — Kraków, Poland, June 2022 – Sept 2022
- Built and validated automated ETL data pipelines on Microsoft Azure
- Worked with SQL warehouses and Databricks for scalable data processing

Skills

Programming: Python (Expert), C++, SQL, TypeScript

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

Machine Learning: Bayesian Optimization, VAEs, Reinforcement Learning in PyTorch, Pandas, Scikit-Learn

Publications

Multi-Fidelity Bayesian Optimization for Simulation-Based Autonomous Driving Systems Testing — June 2025

Olek Osikowicz, Phil McMinn, Wei Xing, Donghwan Shin

Manuscript under review at the 2026 IEEE Intelligent Vehicles Symposium (IV 2026)

Empirically Evaluating Flaky Tests for Autonomous Driving Systems in Simulated Environments — Apr 2025

Olek Osikowicz, Phil McMinn, Donghwan Shin

eprints.whiterose.ac.uk/222933 *2025 IEEE/ACM International Flaky Tests Workshop (FTW 2025)*