

# Nikolaos Louloudakis, Ph.D.

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## Professional Experience

### Barclays

*AI Researcher & Engineer (AVP) | October 2025 - Present*

Conducting AI-oriented R&D as a member of the distinguished engineering team on AI.

- Automating analysis and testing of LLMs and improving AI-focused information retrieval.
- Guiding stakeholders/collaborators on AI-driven code compilation.

### University of Edinburgh

*Research Collaborator, AI Testing | October 2025 - Present*

*Postdoctoral Researcher, AI Testing | October 2024 - October 2025 | 2 Top-Tier Publications (ICSE, CC)*

Worked on differential and metamorphic testing of AI/ML models and compilers.

- Applied research on DNN optimizer fault detection, discovering 14 unknown bugs in ONNX Optimizer.
- Implemented a utility that allows selective model quantization and deployment.
- Co-supervised a research intern, working on autonomous driving systems.
- PC member/reviewer: AAAI (2024), ICSE DeepTest, Alware, TOSEM, NEUNET, EMSE (2026)

### Oracle Labs

*Research Associate (Intern) | May 2024 – August 2024*

Implemented a novel feature for [Sandwood](#), an ML compiler for probabilistic models.

### Carbon Glance

*Co-Founder & Lead Technical Coordinator | January 2022 – May 2024*

Coordinated the design and development of the company product, related to carbon regulations.

- Formed and coordinated a team of 5 talented and strong software engineers.
- Contributed in key decisions, and introduced procedures towards effective product development.

### Workable

*Software Engineer | September 2018 – April 2021 | 🏆 Workable Security Champion*

Designed, developed, and integrated services and components for an Applicant Tracking System, following the full software development lifecycle while collaborating with cross-functional teams.

- *AMP*: Implemented a compiler to automatically create hybrid, valid AMP pages from React.
- *CI/CD*: Implemented the testing pipeline for the brand design assets of the company.
- *Search*: Developed a component responsible for the integration with a third-party search service.
- *Internationalization*: Prepared the i18n integration of resources across a variety of services.
- *Analytics*: Refined the analytics integration mechanism for all company services.

### PeopleCert Education

*Coding Bootcamp Instructor | February 2018 - June 2021 (Various Iterations)*

Served as coding instructor to professionals of ages 20 - 50, on multiple bootcamp iterations.

### Accenture

*Software Engineer - Consultant | March 2018 – August 2018*

Worked in the largest telecommunication vendor in Greece.

- Integrated services in pipelines affecting procedures related to thousands of customers.
- Developed automation utilities that increased team productivity, saving valuable team man-hours.

## Hellenic Army

Software Engineer - Analyst | June 2017 – February 2018

Worked on 2 .NET-based Content Management Systems.

## ICS-FORTH Research Foundation

Software Engineer - Graduate Research Associate | July 2014 – April 2017

🏆 Graduate Scholarship | Best Paper Award | 3 Publications

Applied Research & Development on IoT environments and automation of testing.

- Implemented the database infrastructure and a number of modules for a smart educational suite.
- Contributed towards the implementation and testing of a programmable IoT environment.

## StackOverflow (Volunteer)

Established Member | September 2013 – October 2023

[SO Profile](#) | 220+ answers | Estimated impact: 4M Users | 6K reputation points | Top 7%

## Education

### Ph.D., Computer Science (AI Testing), University of Edinburgh

January 2021 – November 2024 | First-authored 5 Top-Tier Venue Publications

**Thesis:** *Testing Deep Neural Networks Across Different Computational Configurations*

**Supplementary Contributions:** TA in Software Testing (4 semesters, 150+ students each) | Reviewer at AAAI SRRAI track | Supervisor of 4 M.Sc. theses | Leader of a M.Sc. Beyond-Curriculum Initiative

### M.Sc., Information Systems & Human-Computer Interaction, University of Crete

March 2014 – April 2017, 9.13/10 (Excellent) | 1 Publication (+ 3 more with ICS-FORTH)

**Thesis:** *AmITest: A Framework for Semi-Automated Testing of Ambient Intelligence Environments*

**Also served as TA:** Human – Computer Interaction (HCI), Advanced Topics in HCI

### B.Sc., Computer Science & Software Engineering, University of Crete

October 2008 – February 2014, 7.49/10 (Top 3% Of Class 2008)

**Thesis:** *VHF Transceiver UI Components of a System for Emergency Situations*

## Selected Publications

### [A Selective Quantization Tuner for ONNX Models](#)

N. Louloudakis, A. Rajan | In IEEE/ACM ICSE NIER 2026, Rio de Janeiro, Brazil

### [DiTOX: Fault Detection and Localization in the ONNX Optimizer](#)

N. Louloudakis, A. Rajan | In ACM SIGPLAN CC 2026, Sydney, Australia

### [FetaFix: Automatic Fault Localization and Repair of Deep Learning Model Conversions](#)

N. Louloudakis, P. Gibson, J. Cano, A. Rajan | In EASE 2025, Istanbul, Turkey

### [Exploring Robustness of Image Recognition Models on Hardware Accelerators](#)

N. Louloudakis, P. Gibson, J. Cano, A. Rajan | In IEEE ICST Mutation 2025, Naples, Italy

### [DeltaNN: Differential Testing to Evaluate Robustness of Image Recognition Models](#)

N. Louloudakis, P. Gibson, J. Cano, A. Rajan | In IEEE ICSME Industry Track 2023, Bogotá, Colombia

### [Fault Localization for Buggy Deep Learning Framework Conversions in Image Recognition](#)

N. Louloudakis, P. Gibson, J. Cano, A. Rajan | In IEEE/ACM ASE NIER Track 2023, Kirchberg, Luxembourg

### [Assessing Robustness of Image Recognition Models to Changes in the Computational Environment](#)

N. Louloudakis, P. Gibson, J. Cano, A. Rajan | In NeurIPS ML Safety 2022, New Orleans, USA