Serhii Ivanenko

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Summary

I am a third-year PhD student and a teaching assistant at Instituto Superior Técnico, and a student researcher at INESC-ID. My research interests focus on cloud computing, virtualization, programming languages, and managed runtimes. I completed my master's degree in Computer Science and Engineering at Instituto Superior Técnico and my bachelor's degree in Software Engineering at Lviv Polytechnic National University. I have had research internships at Oracle Labs and IBM Research.

Education

Instituto Superior Técnico, Lisbon, Portugal *2024–present*
PhD in Computer Science and Engineering
Advised by Prof. Rodrigo Bruno

Instituto Superior Técnico, Lisbon, Portugal *2021–2023*
MSc in Computer Science and Engineering Average Grade: 17.43/20
Specializations: Software Engineering and Cyber-Security
Master's Thesis: Serverless Persistent Resources. Thesis Grade: 19/20
Advised by Prof. Rodrigo Bruno

Lviv Polytechnic National University, Lviv, Ukraine *2017–2021*
BSc in Software Engineering, Diploma with Honours Average Grade: 95.9/100
Specialization: Data and Knowledge Engineering
Bachelor's Thesis: Failover of Java-based native applications in the cloud infrastructure

Working Experience

INESC-ID, Lisbon, Portugal *2022–present*
Student Researcher

- Working on cloud platforms leveraging cutting-edge language runtimes and systems technologies
- Collaboration with Oracle Labs (until 2024)

IBM Research, Dublin, Ireland *2026*

Research Intern

- Worked on recommender-driven resource configuration for AI fine-tuning jobs in a shared cluster

Oracle Labs, Lviv, Ukraine *2019–2022*

Student/Intern

- Contributed to ECMAScript compatibility of the GraalVM JavaScript engine
- Worked on GraalVM JavaScript interoperability features
- Worked on GraalVM Native Image integration into a serverless platform
- Participated in Oracle DevRel projects

Key Projects

Hydra, INESC-ID, *2022–2025*

Hydra is a slim multi-language runtime designed for serverless. It makes use of GraalVM Native Image Isolates to provide lightweight runtime virtualization, thus enabling the collocation of different serverless functions in the same language runtime process for high-density computations. I am working under the supervision of Prof. Rodrigo Bruno from Instituto Superior Técnico.

CloudJIT, INESC-ID/Oracle Labs, *2021–2023*

CloudJIT is a project that aims at optimizing frequently used serverless functions by employing an optimization pipeline to the function code. I was working under the supervision of Prof. Rodrigo Bruno from Instituto Superior Técnico and Dr. Vojin Jovanovic from Oracle Labs Switzerland.

GraalVM Native Image, Oracle Labs, *2021–2022*

GraalVM Native Image is a technology that allows native compilation of Java applications into executable images. Under the supervision of Dr. Vojin Jovanovic from Oracle Labs Switzerland, Dr. Christian Wimmer from Oracle Labs USA, and Prof. Rodrigo Bruno from Instituto Superior Técnico, I implemented features that unlock full usage of Native Image in the cloud infrastructure to improve runtime characteristics of the Java-based applications.

My contributions related to this project are open-source and can be accessed by the following links:

- My commits in `oracle/graal`
- My commits in `oracle-devrel/picluster`

GraalVM JavaScript, Oracle Labs, *2019–2021*

GraalVM JavaScript is a high-performance JavaScript engine built on top of the GraalVM technology. My responsibilities in this project were to implement the newest ECMAScript proposals in the GraalVM JavaScript engine and to improve its interoperability capabilities. Besides, I worked on introducing GraalVM JavaScript into an official ECMAScript Conformance Test Suite (Test262). I was working under the supervision of Dipl.-Ing. Dr. Christian Wirth from Oracle Labs Austria.

My contributions related to this project are open-source and can be accessed by the following links:

- My commits in `oracle/graaljs`
- My commits in `tc39/eshost`
- My commits in `GoogleChromeLabs/jsvu`

Teaching

Platforms for AI Systems *Fall 2026*
Teaching Assistant, Instituto Superior Técnico
Cloud Computing and Virtualization *Spring 2023, Spring 2024, Spring 2025, Spring 2026*
Teaching Assistant, Instituto Superior Técnico
Management and Administration of IT Infrastructures and Services *Fall 2023, Fall 2024, Fall 2025*
Teaching Assistant, Instituto Superior Técnico

Publications

Premature Hardware Binding is the Root of all Evil! Making Serverless Performance-Portable with Lazy Hardware Binding
To appear in Annual Technical Conference (ATC) 2026
Serhii Ivanenko, Carlos Segarra, and Rodrigo Bruno

Faastion: Elastic and Scalable Native Library Isolation for High-Density Serverless Platforms
To appear in Annual Technical Conference (ATC) 2026
Miguel Lourenço, Rahul Kondlapudi, Serhii Ivanenko, Rodrigo Cidra, Pedro Fonseca, Rodrigo Bruno

Hydra: Virtualized Multi-Language Runtime for High-Density Serverless Platforms
ACM Symposium on Cloud Computing (SoCC) 2025
Serhii Ivanenko, Vasyl Lanko, Rudi Horn, Vojin Jovanovic, and Rodrigo Bruno

Mosaic: Optimizing Cloud Resource Efficiency with Lazily-Packaged Application Modules
SErverless Systems, Applications and MEthodologies (SESAME) 2025
Serhii Ivanenko, Carlos Segarra, and Rodrigo Bruno

CloudJIT: A Just-in-Time FaaS Optimizer (Work in Progress)
Managed Programming Languages & Runtimes (MPLR) 2023
Serhii Ivanenko, Rodrigo Bruno, Jovan Stevanovic, Luís Veiga, and Vojin Jovanovic

Awards

PhD Research Scholarship (Fundação para a Ciência e a Tecnologia);

The "Excellent Teacher 2024-2025" Diploma for teaching **Cloud Computing and Virtualization** and **Management and Administration of IT Infrastructures and Services**;

The "Excellent Teacher 2023-2024" Diploma for teaching **Cloud Computing and Virtualization** and **Management and Administration of IT Infrastructures and Services**;

The "Excellent Teacher 2022-2023" Diploma for teaching **Cloud Computing and Virtualization**;

The Academic Merit Diploma 2022/2023, Instituto Superior Técnico.