Georgios-Petros Drosos

CNB H 100.9 Universitätstrasse 6, 8092 Zürich, Switzerland

✉ gdrosos@student.ethz.ch | 🏠 https://gdrosos.github.io/ | ⬚ gdrosos | 𝗂𝗇 georgios-petros-drosos | 🎓 Giorgos Drosos

Experience

Researcher
Mar. 2023 - Dec. 2023

SecOPERA Project
Athens, Greece

- Served as a Researcher on the SecOPERA project (EU H2021) in collaboration with Athens University of Economics and Business.
- Initially was responsible for defining user requirements to tailor the project's direction and outcomes.
- Led a research effort to develop an automated technique for debloating dependency code in Python applications, leveraging both static and dynamic program analysis techniques.
- Successfully removed 33 bloated dependencies across 28 open-source projects, eliminating a total of 285,322 lines of unused Python code.
- Investigated dependency bloat at various granularity levels using call graphs in the PyPI ecosystem, assessing its prevalence, security impact, root causes and developer perception
- Completed project milestone by publishing research work at the Research Track of the International Conference on the Foundations of Software Engineering (FSE 2024), a Core A* conference with a 25% (121/483) acceptance rate.

Researcher
Jul. 2022 - Mar. 2023

Business Analytics Laboratory, AUEB
Athens, Greece

- Investigated the effects of transitivity and granularity on Technical Leverage in the Maven Ecosystem.
- Performed a reachability analysis on static call graphs of 5840 Maven applications along with their direct and transitive dependencies.
- Measured the size of the dependency code which is reachable within each application at the fine-grained level.

Research Software Engineer
Sep. 2021 - Jul. 2022

FASTEN Project - Business Analytics Laboratory, AUEB
Athens, Greece

- Worked on FASTEN, a European Horizon 2020 Research Project aiming to develop an intelligent software package management system that will enhance robustness and security in software ecosystems of C, Java, and Python applications.
- Maintained AUEB team's software tools, which produce C and Python call graphs using static and dynamic analysis techniques.
- Created and deployed in production two Spring Boot REST-API Services, in order to make FASTEN's Knowledge Base accessible online.
- Successfully presented and defended AUEB's working package at the project's Final Review Meeting with the EU Commission.

Research Assistant
Mar. 2021 - Sep. 2021

Business Analytics Laboratory, AUEB
Athens, Greece

- Conducted empirical research on typing-related bugs in compilers of four mainstream JVM languages: Java, Kotlin, Groovy, and Scala.
- Manually analysed and categorised 320 fixed bugs in terms of test case characteristics, root causes, symptoms, and fix characteristics.
- Research work resulted in publication in Object-Oriented Programming Systems, Languages, and Applications Conference (OOPSLA).

Algorithm Developer
May 2021 - Aug. 2021

Propathlima
Athens, Greece

- Developed a greedy algorithm to compute and produce an optimal schedule for a Football Tournament, based on team preferences and court availability.

Education

MSc in Computer Science
Sep. 2023 - Aug. 2025 (expected)

ETH Zurich
Zurich, Switzerland

- Current GPA: 5.6/6
- Major: Secure and Reliable Systems
- Minor: Data Management Systems

BSc in Management Science & Technology
Sep. 2018 - Oct. 2022

Athens University of Economics and Business (AUEB)
Athens, Greece

- GPA: 9.18/10 "Distinction" (graduated 3rd in a class of 145 students).
- 4-year degree; 246 ECTS
- Major: Software Engineering and Data Science
- BS. Thesis: "Exploring the Statistical Properties of Fine-grained Code Reuse in the PyPI Ecosystem" (graded 9.5/10).
- Thesis Advisor: Diomidis Spinellis

Skills

Programming	Java (expert), Python (expert), SQL (expert), Bash (expert) C/C++ (moderate), C (moderate), Matlab (moderate), HTML (moderate), Scala (basic), Rust (basic), Kotlin (basic), CSS (Basic)
Technologies	Git, Github Actions, Docker, Kubernetes, Apache Kafka, Apache Spark, Apache HBase, Apache Hadoop, Redis, MongoDB, Neo4J, JSONiq, RumbleDB, RapidMiner, PowerBI, Salesforce, SAP ERP, SPSS Statistics, Flask, Spring Boot, Tamarin, Ansible, Puppet, Chef, LaTeX
Languages	Greek (Native), English (Proficient), German (Intermediate)

Publications

- **Georgios-Petros Drosos**, Thodoris Sotiropoulos, Georgios Alexopoulos, Dimitris Mitropoulos, and Zhendong Su. "When Your Infrastructure is a Buggy Program: Understanding Faults in Infrastructure as Code Ecosystems". Under Submission.

- **Georgios-Petros Drosos**, Thodoris Sotiropoulos, Diomidis Spinellis, and Dimitris Mitropoulos. "Bloat beneath Python's Scales: A Fine-Grained Inter-Project Dependency Analysis". *In Proceedings of the ACM on Software Engineering, FSE '24*. ACM, July 2024.

- Stefanos Chaliasos, Thodoris Sotiropoulos, **Georgios-Petros Drosos**, Charalampos Mitropoulos, Dimitris Mitropoulos, and Diomidis Spinellis. "Well-Typed Programs Can Go Wrong: A Study of Typing-Related Bugs in JVM Compilers". *In Proceedings of the ACM on Programming Languages, OOPSLA '21*. ACM, October 2021.

Teaching Experience

Teaching Assistant, Course: Programming II
Sep. 2022 - Jan. 2023

ATHENS UNIVERSITY OF ECONOMICS AND BUSINESS (AUEB)
Athens, Greece

- Covered advanced programming topics in Java such as Compilers, Generic Programming, Functional and Concurrent Programming.
- Assisted students in understanding assignment concepts and evaluated their individual and team projects.
- Delivered biweekly lectures on topics including Compilers, Finite State Machines, Data Structures, and Generic Programming.

Laboratory Assistant, Course: Introduction to Computer Science
Sep. 2021 - Feb. 2022

ATHENS UNIVERSITY OF ECONOMICS AND BUSINESS (AUEB)
Athens, Greece

- Introduced students to basic concepts of Computer Science, including Computer Architecture, Computer Networks, Algorithm Design, and Computability.
- Assisted students with assignments and practical lab exercises to reinforce the material taught in class.
- Evaluated student work and provided feedback on their understanding and application of course concepts.

Invited Talks

Bloat Beneath Python's Scales: A Fine-Grained Inter-Project Dependency Analysis
Oct. 2023

ETH ZURICH ADVANCED SOFTWARE TECHNOLOGIES (AST) LAB SEMINAR
Zurich, Switzerland

- Invited Presentation

Exploring the Statistical Properties of Fine-Grained Code Reuse in the PyPI Ecosystem
Dec. 2022

KTH ROYAL INSTITUTE OF TECHNOLOGY SOFTWARE RESEARCH MEETUP
Stockholm, Sweden (Remote)

- Thesis Presentation

FASTEN Project: Enabling Intelligent Software Package Management
Oct. 2022

WEBINAR OF THE EUROPEAN FORUM OF THE SOFTWARE RESEARCH COMMUNITY
Brussels, Belgium (Remote)

- Keynote Address

Honors & Awards

2022	**Research Scholarship Award (€2,400),** Athens University of Economics and Business	*Athens, Greece*
2022	**Honorary Commendation,** Athens University of Economics and Business	*Athens, Greece*
2018	**Academic Award (€800),** Eurobank	*Athens, Greece*

Volunteering

Student Volunteer
Aug. 2021

29TH ACM JOINT EUROPEAN SOFTWARE ENGINEERING CONFERENCE AND SYMPOSIUM ON THE FOUNDATIONS OF SOFTWARE ENGINEERING (ESEC/FSE)
Athens, Greece

Open Source Software Contributor *Feb. 2021 - Aug. 2021*
JabRef *Germany (Remote)*

IT-Logistics Manager *Aug. 2019 - Jul. 2021*
17th Management Science and Technology Student Conference *Athens, Greece*

Member of the Promotion Team *Oct. 2018 - Jul. 2019*
16th Management Science and Technology Student Conference *Athens, Greece*