Spyros Pavlatos

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Education

University of Pennsylvania *Aug 2022 – present*
PhD in Computer and Information Science
- *Advisor*: Vincent Liu
- Research on microservices and serverless computing by blending ideas from Distributed Systems, Programming Languages, and Formal Methods.

National Technical University of Athens *Oct 2016 – July 2022*
MEng in Electrical and Computer Computer Engineering
- *GPA*: 9.26/10
- *Thesis*: A Test Suite for Model Checking Persistent Memory Programs ⧉ *Advisor*: Kostis Sagonas

Experience

Teaching Assistant *Philadelphia, PA*
Univesity of Pennsylvania *2023 – 2024*
- *Courses*: Software Analysis, Compilers

Teaching Assistant *Athens, Greece*
National Technical University of Athens *2020 – 2021*
- *Courses*: Introduction to Programming, Programming Techniques

Telecommunications Engineer *Athens, Greece*
White Noise NTUA *2017 – 2019*
- Founding member of the space engineering team
- Member of project Drillsat ⧉ and project Daedalus ⧉ for which I designed the telecommunications subsystems and data handling protocols.

Projects

λ-trim Debloater *2024 – present*
Debloater for Python and serverless applications
- Designed a debloating algorithm that leverages established dynamic analysis techniques and a cost model to optimize serverless applications.
- Implemented the algorithm in a tool that can be used to debloat Python and serverless applications and achieved up to 20% reduction in cold start time and cost when deployed on AWS Lambda.
- Actively mantaining the open-source version of the tool.

MuCache ⧉ *2022 – 2023*
Caching framework for microservices
- Implemented various applications to test and evaluate the proposed framework.
- Verfiied the correctness of the caching framework with a pen-and-paper proof.

PM-Benchmarks ⧉ *2021 – 2022*
Test suite for model checking persistent memory programs
- Developed a test suite consisting of litmus tests and complex data structures for model checking persistent memory programs under the Px86 memory persistency model.
- Tested the state-of-the-art model checker GenMC ⧉ against the test suite and reported some critical internal bugs in the tool.

Publications

λ-trim: Reducing Monetary and Performance Cost of Serverless Cold Starts with Cost-driven Application Debloating

Spyros Pavlatos, Xuting Liu, Yuhao Liu, Vincent Liu

Under Submission

MuCache: A General Framework for Caching in Microservice Graphs
Haoran Zhang, Konstantinos Kallas, Spyros Pavlatos, Rajeev Alur, Yuhao Liu, Vincent Liu
NSDI'24

Skills

Programming: C/C++, Rust, OCaml, Erlang, Python, Go, JavaScript

Operating Systems / Platforms: Windows, Linux, AWS, GCP

Databases: MySQL, MongoDB, RocksDB, Redis, memcached

Frameworks & Tools: LLVM, OpenMP, MPI, PyTorch, Docker, Kubernetes, frama-c, TLA+, ns-3

Miscellaneous: LaTeX, Git/Github

Honors/awards

- **Soloman M. Swaab Fellowship** - University of Pennsylvania
- **1st Prize in Cansat in Greece 2018** space engineering competition (universities level).
- **IEEEXtreme programming competitions**. Ranked **94/5500** (15.0), **99/3700** (14.0) and **184/4000** (13.0) worldwide.
- **Bronze Medal in the Panhellenic Physics Competition Aristotle 2016**. Ranked 25th overall