

Dimitrios Karnikis

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Interests

Trusted Execution Environments (e.g. Intel SGX, Arm TrustZone), High-Level Languages (e.g. Javascript, Lua), Security, Embedded Devices, Operating and Distributed Systems

Education

Master of Science (MSc) student in Computer Science

University of Crete, Greece

February 2019 – February 2021

Bachelor of Science (BSc) in Computer Science

University of Crete, Greece

Sept 2013 – November 2018

Work Experience

○ Aarno Labs – Remote

Software Engineer

TEE's, High-level Languages, CI/CD

February 2021 – April 2022

○ DiSCS Laboratory – FORTH-ICS

Postgraduate research fellow

Intel SGX, Arm Trustzone

February 2019 – February 2021

○ DiSCS Laboratory – FORTH-ICS

Undergraduate research fellow

Intel SGX, Android

November 2016 – February 2019

Projects

○ LuaGardia: A Confidential Computing Framework for TEEs (Master Thesis)

Ported the Lua interpreter in SGX enclaves enabling dynamic code execution of legacy Lua applications.

○ PaSh: Light-touch Data-Parallel Shell Processing (Open Source)

PaSh is a system for parallelizing POSIX shell scripts. It has been shown to achieve order-of-magnitude performance improvements on shell scripts.

- Automation scripts for correctness and performance tests based on Github Actions

- Rendering and evaluation infrastructure for every Github commit

○ Atlas: Automated Scale-out of Trust-Oblivious Systems to TEEs (Ongoing)

System for automatically scaling out components on TEEs. It uses program transformations to offload function calls of a given application and distribute load among TEE nodes, with respect to the sequential execution.

○ Leveraging Arm TrustZone on mobile devices using Lua Language

Implementation and integration of the Lua interpreter on Trusty TEE

○ Andromeda Framework (Bachelor Thesis)

Ported Intel SGX to Android x86 ecosystem. Integrated Intel SGX technology in popular Android services

Publications

○ Andromeda: Enabling Secure Enclaves For The Android Ecosystem

Dimitris Deyannis, Dimitris Karnikis, Giorgos Vasiliadis, Sotiris Ioannidis
4th Information Security Conference (ISC 2021)

○ An Enclave Assisted Snapshot-based Kernel Integrity Monitor

Dimitris Deyannis, Dimitris Karnikis, Giorgos Vasiliadis, Sotiris Ioannidis

Proceedings of the 3rd ACM International Workshop on Edge Systems, Analytics and Networking 2020

- **Andromeda: A Trusted Execution Framework for Android Based on Secure Enclaves**
Dimitris Karnikis, Sotiris Ioannidis ACM Student Research Competition Poster Session, Parallel Architectures and Compilation Techniques (PACT 2018), Cyprus 2018
- **Practically Correct, Just-in-Time Shell Script Parallelization**
Konstantinos Kallas, Tammam Mustafa, Jan Bielak, *Dimitris Karnikis*, Thurston HY Dang, Michael Greenberg, Nikos Vasilakis 16th USENIX Symposium on Operating Systems Design and Implementation (OSDI 2022)

Honors & Awards

- **November 2019 – Ongoing: Postgraduate Scholarship**
Scholarship by the Institute of Computer Science, FORTH - Hellas
- **November 2017 – February 2019: Undergraduate Scholarship**
Scholarship by the Institute of Computer Science, FORTH - Hellas
- **Best Undergraduate Poster Award at ACM SRC, PACT 2018, Cyprus**

Advanced Technical Skills

- **Programming:** C, C++, Lua, JavaScript (ES6, CommonJS)
- **Tools:** Git, GDB, Latex, Bash, Unix Tools, QEMU
- **Operating Systems:** Linux, Windows, Android
- **Other:** Intel SGX, Arm TrustZone, Socket Programming