

# Dimitra Giantsidi

Informatics Forum, University of Edinburgh  
10 Crichton Street, EH8 9AB  
Edinburgh, UK

Email: [dimitra.giantsidi@gmail.com](mailto:dimitra.giantsidi@gmail.com)  
Homepage: <https://dgiantsidi.github.io/>  
GitHub: <https://github.com/dgiantsidi>

## Research Interests

I like to build robust and efficient distributed systems!

My research lies in the field of dependability in distributed systems with focus on the fault tolerance and security. Exploring the applications of modern hardware, such as Trusted Execution Environments and Direct I/O for networking and storage, my work aims to increase the security and performance of widely adopted distributed systems. As such, I have build a few interesting systems: a secure distributed transactional store on top of Intel SGX, RDMA and LSM KVs, a shielded direct I/O network library for robust replication and a shared log system for serverless computing infrastucture on top of byte-addressable storage.

## Education

**Ph.D.** in Computer Science (Sept 2019 - present)

*University of Edinburgh, UK*

*Thesis: Hardware-Assisted Distributed Dependable Systems, Microsoft Research PhD Fellow*

*Advisor: Prof. Dr. Pramod Bhatotia*

**MSc** in Computer Science (Sept 2018 - Aug 2019)

*University of Edinburgh, UK*

Best Performing Female MSc Thesis Award

**MEng** in Computer and Electrical Engineering (Sept 2012 - Mar 2018)

*National Technical University of Athens (NTUA), Greece*

## Employment

**Microsoft Research, Cambridge, UK** Sept 2021 - Dec 2021

*Research Intern*

· Design of KVs for timing attacks for Intel SGX (openenclave framework) and RDMA.

**University of Edinburgh, UK** June 2023 - present

*Research Assistant*

· Hardware/software co-design of a trusted NIC architecture for robust replication.

**Intracom Telecom, Athens, Greece** Jul 2017 - Jul 2018

*Software Systems Engineer*

· Performance and energy optimization of NFV services.

## Honors and Awards

**Best paper nominee** at DSN'22

**Microsoft Research** scholarship, 2019

**Best Performing Female MSc Thesis Award** for MSc thesis, 2019

## Ph.D. Dissertation

**Topic:** Hardware-Assisted Dependable Distributed Systems

**Supervisor:** Prof. Dr. Pramod Bhatotia

In the context of my Ph.D. dissertation, I designed and built distributed systems for the untrusted cloud infrastructure to increase their security properties and performance leveraging the recent hardware advancements in trusted computing (Trusted Execution Environments, e.g., Intel SGX, AMD-SEV), storage (byte-addressable storage) and networking (RDMA, direct I/O, SmartNICs).

**Research projects:**

A Trusted NIC Architecture: Hardware architecture, networking stack, and its applications in building robust distributed systems protocols **Under submission**

Using Modern Cloud Hardware to build Robust and Efficient Replication Protocols for Distributed Data Stores **Under submission**

*FlexLog*: A Shared Log for Stateful Serverless Computing [HPDC'23] [code]

*Treaty*: Secure Distributed Transactions [DSN'22 (Best paper nominee)] [code]

## Publications

**Conference publications:**

A Trusted NIC Architecture: Hardware architecture, networking stack, and its applications in building robust distributed systems protocols

**Under submission**

Using Modern Cloud Hardware to build Robust and Efficient Replication Protocols for Distributed Data Stores

**Under submission**

*Anchor*: Secure Persistent Memory Architecture

*Dimitris Stravakakis, Dimitra Giantsidi, Maurice Bailleu, Philip Saendig, Shady Issa, Pramod Bhatotia*

**SIGMOD'24**

*FlexLog*: A Shared Log for Stateful Serverless Computing

*Dimitra Giantsidi, Emmanouil Giortamis, Nathaniel Törnøw, Florin Dinu, Pramod Bhatotia*

**ACM HPDC'23**

*Treaty*: Secure Distributed Transactions

*Dimitra Giantsidi, Maurice Bailleu, Natacha Crooks, Pramod Bhatotia*

**IEEE/IFIP DSN'22 (Best paper nominee)**

*Avocado*: A Secure In-Memory Distributed Storage System.

*Maurice Bailleu, Dimitra Giantsidi, Vasilis Gavrielatos, Le Quoc Do, Vijay Nagarajan, Pramod Bhatotia*

**USENIX ATC'21**

DICER: Diligent Cache Partitioning for Efficient Workload Consolidation

Konstantinos Nikas, Nikela Papadopoulou, Dimitra Giantsidi, Vasileios Karakostas, Georgios Goumas, Nectarios Koziris

ICPP'19

## Open Source Projects

A Trusted NIC Architecture

— <https://github.com/dgiantsidi/replication-protos>

— <https://github.com/dgiantsidi/Coyote-playground>

FlexLog

— <https://github.com/TUM-DSE/FlexLog>

Treaty

— <https://github.com/TUM-DSE/Treaty>

Personal (research) projects

— <https://github.com/dgiantsidi/ctxswitch-bench>

— <https://github.com/dgiantsidi/protocols-aCounters>

— <https://github.com/dgiantsidi/client-server-model>

## Talks

ACM HPDC'23, Orlando, US

*FlexLog: A Shared Log for Stateful Serverless Computing*

IEEE/IFIP DSN'22, Baltimore, US

*Treaty: Secure Distributed Transactions*

Third Annual SGX Community Day 2022 (virtual)

USENIX ATC'21 (virtual)

*Avocado: A Secure In-Memory Distributed Storage System*

## Teaching experience and Supervision

**Teaching assistant:** Operating systems and Distributed Systems Engineering courses, University of Edinburgh and TU Munich, Dec 2019 - present.

— Operating Systems, University of Edinburgh, Semester 2 (Spring), 2019 - 2022

— Computer systems lab, Cloud-lab, Advanced systems programming, TU Munich, Winter and Summer Semesters, 2020 - 2023

**BSc/MSc thesis advisor:** Supervised 3 BSc and 2 MSc thesis in TU Munich, Dec 2020 - present.

## Professional activities

Web chair: **EuroSys'21**

Shadow PC member: **EuroSys'23, SoCC'23, WWW'22**

## Skills

**Languages:** C/C++, Python, Bash, Golang, Java, Vitis HLS

**Systems and Tools:** RocksDB and folly library, TEEs (Intel SGX, OpenEnclave SDK, AMD-sev), direct network I/O (DPDK, RDMA, Alveo SmartNICs), SPDK, Intel RDT, LLVM, collectd, POSIX/Unix, OpenMP and MPI, gRPC

**Virtualization:** KVM, Qemu/Libvirt, Docker, Kubernetes

**Distributed Programming:** Hadoop MapReduce, Socket and RPC programming

## References

**Prof. Dr. Pramod Bhatotia**

TU Munich, Germany

Email: pramod.bhatotia@cit.tum.de

**Prof. Dr. Natacha Crooks**

UC Berkeley, USA

Email: ncrooks@berkeley.edu

**Prof. Dr. Manos Kapritsos**

University of Michigan, USA

Email: manusk@umich.edu

**Dr. Florin Dinu**

Huawei Research Center Munich, Germany

Email: florin.dinu@huawei.com