Konstantinos Kanellis

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EDUCATION

University of Wisconsin-Madison, Madison, WI

- Ph.D. in Computer Sciences — 2019 – Present
  - Focus: Computer Systems, Database Systems, Machine Learning
  - Advisor: Prof. Shivaram Venkataraman
  - Coursework: Big Data Systems, Computer and Network Security, Topics in Database Systems, Distributed Systems, Advanced Computer Networks, Intro to Optimization, Advanced Operating Systems, Machine Learning Optimized Systems
  - Current CGPA: 4.0 / 4.0

University of Thessaly, Volos, Greece

- Master of Engineering (5-year program) in *Electrical and Computer Engineering* — 2013 – 2018
  - Thesis: "Correlating Workload Behavior with Core Voltage Variability with Machine Learning"
  - Advisor: Prof. Christos D. Antonopoulos
  - CGPA: 9.40 / 10.00 (Ranked 1st / 139)

WORK & RESEARCH EXPERIENCE

Microsoft Gray Systems Lab, Madison, WI

- Research Assistant — Jan 2021 – Present
  - Working on developing methods and tools for automated performance tuning of storage and database systems.

Microsoft Research, Redmond, WA

- Research Intern, **Data Systems Group** — May 2021 – Aug 2021
  - Worked on extending the core design of *FASTER*, a high-performance concurrent latch-free key-value store.
  - Advisor: Dr. Badrish Chandramouli

IBM Research - Zurich Lab, Rüschlikon, Switzerland

- Research Intern, **Cognitive Computing & Industry Solutions Group** — Jan 2019 – Jun 2019
  - Characterized the impact on model accuracy of various pre-processing options, for CNN image classification tasks.
  - Evaluated several state-of-the-art *object detection* algorithms on real-world large image datasets, and proposed a simpler alternative that provides a better accuracy vs. training/testing time trade-off for certain scenarios.
  - Advisors: Dr. Cristiano Malossi, Dr. Roxana Istrate

Department of Electrical and Computer Engineering, University of Thessaly

- Undergraduate Research Assistant, **Computer Systems Lab** — Mar 2018 – Oct 2018
  - Leveraged machine learning methods to estimate the CPU voltage from hardware performance counters measurements.
  - Developed an online program phase detection tool that utilizes hardware-related events (sampled from within a Linux kernel module) to classify the time-varying behavior of programs with minimal performance overhead.
  - Advisors: Prof. Christos D. Antonopoulos, Prof. Nikolaos Bellas

European Organization for Nuclear Research (CERN), Geneva, Switzerland

- CERN openlab Summer Intern — Jul 2017 – Sep 2017
  - Worked on **BioDynaMo** (*Biology Dynamics Modeller*), part of *Human Brain Development* project.
  - Designed and implemented middleware prototype capable of managing the computations in high-performance clusters and cloud environments using *C++14* and *ZeroMQ* messaging library.
  - Advisors: Dr. Fons Rademaker, Lukas Breitwieser

PUBLICATIONS

- <u>Konstantinos Kanellis</u>, Cong Ding, Brian Kroth, Andreas Müller, Carlo Curino, Shivaram Venkataraman. "LlamaTune: Sample-Efficient DBMS Configuration Tuning ". *Submitted to VLDB'22*

- <u>Konstantinos Kanellis</u>, Ramnatthan Alagappan, Shivaram Venkataraman. "Too Many Knobs to Tune? Towards Faster Database Tuning by Pre-selecting Important Knobs". *USENIX Workshop on Hot Topics in Storage and File Systems* (**HotStorage'20**), July 2020 – ***Best Presentation Award Finalist***

- I. Parnassos, N. Bellas, N. Katsaros, N. Patsiatzis, A. Gkaras, <u>K. Kanellis</u>, C.D. Antonopoulos et. al. "A programming model and runtime system for approximation-aware heterogeneous computing" *International Conference on Field Programmable Logic and Applications* (**FPL 2017**), Sept 2017

HONORS & AWARDS

- *CS Departmental Summer Research Assistantship,* UW-Madison — Apr 2020
- Graduate *CS Departmental Scholarship* for admission at UW-Madison — Aug 2019
- Highest CGPA in the history of the ECE Department, *University of Thessaly* — Dec 2018

- Co-Winner of the Intel® Modern Code Developer Challenge   Nov 2017
  Competition among the Intel-sponsored projects of *CERN openlab summer student programme*. Received a sponsored trip to the SuperComputing 2017 conference (SC17), where I showcased my code-modernization work efforts and results.
- IEEEXtreme 9.0, 24-Hour Programming Contest (Top 100)   Oct 2015
  Ranked 80th worldwide among over 2500 teams, with our team **123Code**
- US Educational Trip at *UC Berkeley* and *Stanford University*, California, USA   Apr 2015
  Selected among 350 Greek university students to participate in a funded, by the Greek tech cluster *Corallia*, trip.
  Had the chance to attend course lectures, meet professors, Ph.D. students, and visit companies at *Silicon Valley*.
- *Nicholaos Kritskis* Scholarship, Ministry of Education (Greece)   2013 – 2018
- 24th International Olympiad in Informatics   Aug, Sep 2012
  20th Balkan Olympiad in Informatics
  Represented Greece as a member of the National Informatics Team.

TEACHING EXPERIENCE

TA for *University of Wisconsin-Madison*

- CS 537 – "Introduction to Operating Systems"   Spring 2020
- CS 354 – "Machine Organization and Programming"   Fall 2019

TA for *University of Thessaly*

- "C Programming", "Computer Systems Programming"   Fall 2017, 2018, Spring 2018
- "Introduction to Algorithms"   Spring 2018
- "Concurrent Programming"   Fall 2016
- "Linear Algebra"   Fall 2015, 2016

VOLUNTARY WORK

Student ACM Chapter, University of Wisconsin-Madison

- Revamped, managing the SACM website, as part of the Communications team.   Sep 2019 – Present

IEEE Student Branch of Thessaly – Volos, University of Thessaly

- Founder and Chairman   Sep 2015 – Sep 2017
  - Responsible for the overall management of this newly-created branch of 30 active members.
  - Organized and participated in numerous technical and soft-skills presentations and workshops.

Preparation Camp for International & Balkan Olympiad in Informatics

- Member of the Coaching Team, Greek Computing Olympiad   Apr 2014, 2016
  - Preparation consisted of presenting and constructing time and memory efficient algorithms to solve algorithmic competitive programming problems. National informatics teams compete at the yearly **IOI**, BOI, and Junior BOI.

SELECTED PROJECTS

Strongly-Consistent, Highly-Available, and Durable Key-Value Storage System Jan 2021 – May 2021

Implemented a distributed key-value storage system (*C++17*) which uses replication and quorum-based voting to serve multiple client requests, even in the presence of failures (Distributed Systems course).

Exploring Information-Leakage Vulnerabilities on Cloud Providers' Instances Oct 2019 – Dec 2019

Investigated the possibility of performing various attacks including exploiting network interface cards, page deduplication, memory image extraction, and computation-offloading hardware on *AWS*, *Microsoft Azure*, and *Google Cloud*. Discovered few vulnerabilities that may be used to reveal running workload.

Query Deployment and Execution Platform for Wireless Sensor Networks Oct 2017 – Jan 2018

Built a platform for apps that implement long-running queries and *in-network processing* with support for propagating results to the source, using *nesC* and *TinyOS*. Nodes support concurrent app execution and dynamic code (un)loading using a lightweight *Virtual Machine* environment.

TECHNICAL BACKGROUND

Programming Languages	C, C++, Python, Java, MIPS Assembly, Verilog, R, MATLAB, ML
Programming Models / APIs	CUDA, OpenMP, MPI, POSIX Threads
Frameworks / Libraries	gRPC, Keras, TensorFlow, Apache Spark, Pandas
Operating Systems / Tools	Linux, TinyOS, Git, Vim, GDB, Docker, Intel® Parallel Studio

LANGUAGES

- English: Fluent – TOEFL (2018), 103/120 (R28, L25, S25, W25)
- French: Intermediate – *Centre international d'études pédagogiques*, CEFR Level B1
- Greek: Mother tongue

[*Last updated on Apt 15th, 2022*]