

Konstantinos Kanellis

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EDUCATION

University of Wisconsin-Madison, Madison, WI

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

University of Thessaly, Volos, Greece

- Diploma (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

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 supervised machine learning methods to estimate the CPU voltage value at any time point, based on hardware performance counter events measurements taken from a diverse set of workloads and benchmark suites.
 - Developed an online program phase detection tool that utilizes hardware-related events (sampled 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

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.
- IEEEExtreme 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.

PUBLICATIONS

- Konstantinos Kanellis, Ram 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 – to appear)*, July 2020

- I. Parnassos, N. Bellas, N. Katsaros, N. Patsiatzis, A. Gkaras, K. Kanellis, 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

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

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

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 might 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.

Automatic Musical Genre Recognition Nov 2017 – Jan 2018

Experimented with various classifiers (i.e. *SVM*, *AdaBoost*, *Random Forests*, *Neural Networks*) for predicting the musical genre(s) of an input audio file, using *scikit-learn* and *Keras* ML frameworks.

Linux Kernel Modifications, Operating Systems Course Mar 2016 – Jun 2016

Implemented and profiled *Shortest Job First* (SJF) scheduling policy, *Best-Fit* algorithm for the *Simple Lists of Blocks* (SLOB) memory allocator and *Circular LOOK* (C-LOOK) disk scheduling algorithm.

Distributed Runtime System with Auto Load-Balancing Apr 2016 – Jun 2016

Developed a distributed runtime system in Python with transparent strong code mobility, concurrent task execution with auto load-balancing, utilizing group and peer-to-peer communication protocols.

TECHNICAL BACKGROUND

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

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 Apr 29, 2020]