

Ioannis Vardas

VIENNA UNIVERSITY OF TECHNOLOGY - FACULTY OF INFORMATICS

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Education

Vienna University of Technology

Austria

DOCTORAL PROGRAMME IN ENGINEERING SCIENCES AND COMPUTER SCIENCE

October 2021 - Present

- **PhD Thesis:** TBD, Advisor: Prof. Jesper Larsson Träff
- **Coursework:** High Performance Computing; Scientific Programming with Python; Software Testing: From Basic Concepts to Advanced Topics; Fundamental research methods for doctoral students;

University of Crete

Greece

M.Sc. IN COMPUTER SCIENCE AND ENGINEERING, GPA: 8.79/10

November 2019

- **MSc Thesis:** Process Placement Optimizations and Heterogeneity Extensions to the Slurm Resource Manager[5]. Advisor: Prof. Manolis G.H. Katevenis, Co-Advisor: Dr. Manolis Marazakis
- **Graduate Coursework:** Embedded Systems Lab; Principles of Distributed Computing; Internet Systems and Technologies; Computer Architecture; Parallel Computer Architecture; Managed Runtime Systems; Digital Circuits Design Lab Using EDA Tools;

University of Crete

Greece

B.Sc. IN COMPUTER SCIENCE, GPA: 7.03/10

March 2016

- **Graduate Thesis:** Memory Testing through an FPGA with an embedded Processor

Stanford Online

Coursera

MACHINE LEARNING COURSE CERTIFICATE

April 2022

- [Machine Learning Certificate](#)

Research

VIENNA UNIVERSITY OF TECHNOLOGY

- Performance analysis and optimization of HPC applications
- Mapping of parallel (MPI) applications to HPC system topologies and the role of MPI communicators
- mpisee: MPI Profiling for Communication and Communicator Structure [3], presented at the [HIPS Workshop](#) of IPDPS 2022
- In-depth analysis of the overhead of MPI profiling and tracing tools [1]

ICS-FORTH

- Improving the resilience of parallel applications via fault-aware mappings [4], [2].
- Process Placement Optimizations and Heterogeneity Extensions to Slurm RJMS [5]
- Simulating the behavior of Accurate congestion control for RDMA Transfers [6]

Skills

Development and Design Skills	Parallel Programming, Machine Learning, Linux Device Drivers/Modules, Hardware design
Programming Languages	C, C++, Python, Bash, Octave, System-Verilog, ARM and MIPS Assembly, Java
Frameworks and Libraries	MPI, OpenMP, CUDA, NumPy, Scikit-learn, Pandas, Matplotlib
Operating Systems	Linux(Gentoo, RHEL, Debian, Arch), FreeBSD, Microsoft Windows
Virtualization Platforms	QEMU, Virtual Box, Microsoft Hyper-V
Languages besides native(Greek)	English C2 level. University of Michigan, Certificate of Proficiency in English

Employment history

Vienna University of Technology - Faculty of Informatics

Austria

PRE-DOCTORAL RESEARCHER

June 2021 - Present

- Pre-Doctoral Researcher, Parallel Computing Group

ICS-FORTH

RESEARCH ENGINEER

- Research staff, Computer Architecture and VLSI Systems (CARV) Laboratory

[Greece](#)

Dec. 2019 - May 2021

ICS-FORTH

GRADUATE RESEARCH ASSISTANT

- Master's degree Scholarship, Computer Architecture and VLSI Systems (CARV) Laboratory

[Greece](#)

Sept 2017 - Nov 2019

Hellenic Army

SERVED IN THE HELLENIC ARMED FORCES

- Served in the Hellenic Army, Research and Informatics Corps

[Greece](#)

Dec. 2016 - Aug 2017

ICS-FORTH

RESEARCH SCHOLARSHIP

- Research Scholarship, Computer Architecture and VLSI Systems (CARV) Laboratory

[Greece](#)

Aug. 2016 - Nov. 2016

Teaching Experience

Teaching Assistant

[CSD, University of Crete, Greece](#)

COMPUTER ORGANIZATION (CS-225)

Spring 2018, 2019

- Developed [YAC Simulator](#), a cache simulator written in C/C++ for a simple cache scheme

DIGITAL DESIGN (CS-120)

Fall 2018, 2019

PACKET SWITCH ARCHITECTURE (CS-534)

Spring 2016

Attended Summer Schools

ACM Europe Summer School on HPC Computer Architectures for AI and Dedicated Applications

[Barcelona, Spain](#)

COURSEWORK

August-September 2022

- [Program Schedule](#)

HiPEAC Summer School - ACACES

[Fiuggi, Italy](#)

COURSEWORK

July 2018

- Memory Systems and Memory-Centric Computing Systems: Challenges and Opportunities by Onur Mutlu
- Distributed memory programming and algorithms by Johannes Langguth
- GPU Architectures: From Basic to Advanced Concepts by Adwait Jog
- Architectural Support for Virtual Memory by Abhishek Bhattacharjee

PRESENTED POSTER

- Extending Slurm to support Running Workloads in Virtual Machines or VINO-Slurm: Virtual NOdes in Slurm

Side Project

DESIGN OF A RISC-V CORE IN SYSTEM VERILOG

- [Implementation](#) of RV32IC standard with support for stream instructions
- Developed using Synopsys EDA tools for the purposes of Digital Circuits Design Lab Using EDA Tools

References

- Prof. Jesper L. Traff, traff@par.tuwien.ac.at
- Ass. Prof. Sascha Hunold, hunold@par.tuwien.ac.at
- Prof. Manolis G.H. Katevenis, kateveni@ics.forth.gr
- Dr. Manolis Marazakis, maraz@ics.forth.gr

Publications

- [1] Sascha Hunold et al. “An Overhead Analysis of MPI Profiling and Tracing Tools”. In: New York, NY, USA: Association for Computing Machinery, 2022.
- [2] Ioannis Vardas, Manolis Ploumidis, and Manolis Marazakis. “Exploring the Impact of Node Failures on the Resource Allocation for Parallel Jobs”. In: *Euro-Par 2021: Parallel Processing Workshops*. Ed. by Ricardo Chaves et al. Springer International Publishing, 2022, pp. 298–309.
- [3] Ioannis Vardas et al. “mpisee: MPI Profiling for Communication and Communicator Structure”. In: *2022 IEEE International Parallel and Distributed Processing Symposium Workshops (IPDPSW)*. 2022, pp. 520–529. doi: [10.1109/IPDPSW55747.2022.00092](https://doi.org/10.1109/IPDPSW55747.2022.00092).
- [4] I. Vardas, M. Ploumidis, and M. Marazakis. “Towards Communication Profile, Topology and Node Failure Aware Process Placement”. In: *2020 IEEE 32nd International Symposium on Computer Architecture and High Performance Computing (SBAC-PAD)*. 2020, pp. 241–248.
- [5] Ioannis Vardas. “Process Placement Optimizations and Heterogeneity Extensions to the Slurm Resource Manager”. 2019. URL: <https://tinyurl.com/mwujn46s>.
- [6] Dimitris Giannopoulos et al. “Accurate Congestion Control for RDMA Transfers”. In: *Proceedings of the Twelfth IEEE/ACM International Symposium on Networks-on-Chip*. NOCS '18. Torino, Italy: IEEE Press, 2018. ISBN: 9781538648933.