

# Gerasimos Gerogiannis

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## RESEARCH INTERESTS

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- Computer Architecture
- Novel Architectures for Irregular Applications at Scale
- Integration of Machine Learning methods in Computer Architecture

## EDUCATION

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### University of Illinois at Urbana-Champaign (UIUC)

Urbana, IL, USA

*PhD - Electrical and Computer Engineering; expected graduation date 06/2026*

*Aug. 2021 - present*

- Advisor: Prof. Josep Torrellas
- Current GPA: 4.0/4.0

### University of Patras

Patras, Greece

*Diploma in Electrical and Computer Engineering (B.Eng. + M.Eng.)*

*Sep. 2016 - June 2021*

- GPA: 9.83/10.00 (first of my class; *highest recorded in the department's history*)
- Thesis: '*Reinforcement Learning for Task Offloading in Next Generation Networks: Algorithms and Hardware Acceleration*'
- Thesis Supervisor: Prof. Alexios Birbas

## AWARDS AND HONORS

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- **MICRO 2023 Travel Grant**
- **ISCA 2023 Travel Grant**
- **Student Excellence Award** for the highest GPA among all 2020-2021 graduates of the Electrical and Computer Engineering Department of the University of Patras. (University of Patras, Greece, 2021)
- **Excellence Award** for the highest GPA among all 2020-2021 graduates of the Electrical and Computer Engineering Department of the University of Patras. (State Scholarships Foundation, Greece, 2021)
- **Skouras Foundation Award** for the highest GPA among all undergraduate students in the Electrical and Computer Engineering Department, University of Patras. (Skouras Foundation, Greece, 2020)
- **Freshman Excellence Award** for the highest grade in the National University Entrance Exams (Panhellenic Exams) among the freshmen students in the Electrical and Computer Engineering Department of the University of Patras. (University of Patras, Greece, 2016)
- Replacement member of the student team that represented Greece in the 47th International Physics Olympiad. (Switzerland-Liechtenstein, 2016)
- **Distinctions in national high-school student competitions** in physics, chemistry and mathematics:
  - 7th place in phase A and phase B of the National Student Physics Competition organized by the University of Athens (2016).
  - 10th place in the National Student Physics Competition organized by the University of Athens in cooperation with Greek Physicists Union (2015).
  - 12th place in the National Student Chemistry Competition organized by the Greek Chemists Union (2015).
  - Thales Prize in the National Student Mathematics Competition organized by the Greek Mathematical Society (2014-2015).
  - Thales Prize in the National Student Mathematics Competition organized by the Greek Mathematical Society (2013-2014).
  - Member of the team that finished 9th in the Greek Qualifiers for the European Union Science Olympiad (EUSO) (2015).
- **Awards for academic excellence**, all six high-school classes. (Hellenic Ministry of Education, 2010-2016)

## PUBLICATIONS

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- [HPCA'24] '*HotTiles: Accelerating SpMM with Heterogeneous Accelerator Architectures*'  
**Gerasimos Gerogiannis**, Sriram Aananthakrishnan, Josep Torrellas and Ibrahim Hur, 2024
- [MICRO'23] '*Micro-Armed Bandit: Lightweight & Reusable Reinforcement Learning for Microarchitecture Decision-Making*'  
**Gerasimos Gerogiannis** and Josep Torrellas, 2023
- [arXiv preprint] '*Input-sensitive dense-sparse primitive compositions for GNN acceleration*'  
Damitha Lenadora, Vimarsh Sathia, **Gerasimos Gerogiannis**, Serif Yesil, Josep Torrellas and Charith Mendis, 2023
- [ISCA'23] '*SPADE: A Flexible and Scalable Accelerator for SpMM and SDDMM*'  
**Gerasimos Gerogiannis**, Serif Yesil, Damitha Lenadora, Dingyuan Cao, Charith Mendis and Josep Torrellas, 2023
- [ISPASS'23] '*Characterizing the Scalability of Graph Convolutional Networks on Intel® PIUMA*'  
Matthew Adiletta, Jesmin Jahan Tithi, Emmanouil-Ioannis Farsarakis, **Gerasimos Gerogiannis**, Robert Adolf, Robert Benke, Sidharth Kashyap, Samuel Hsia, Kartik Lakhotia, Fabrizio Petrini, Gu-Yeon Wei, and David Brooks, 2023
- [IEEE Access] '*Deep Reinforcement Learning Acceleration for Hard Real-Time Edge Computing Mixed Integer Programming Problems*'  
**Gerasimos Gerogiannis**, Michael Birbas, Aimilios Leftheriotis, Eleftherios Mylonas, Nikolaos Tzanis and Alexios Birbas, 2022

## TALKS

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- '*Domain-Specific Hardware and Software for Mixed Sparse-Dense Algebra at Scale*', ACE Center for Evolvable Computing Theme Meeting, August 4 2023
- '*Accelerators for Irregular Applications*', IBM-Illinois Discovery Accelerator Institute Annual Meeting, March 1 2023

## SELECTED PROJECTS

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- '*miniSPADE: An ASIC prototype for mixed Sparse/Dense algebra acceleration*'  
**Gerasimos Gerogiannis** and Dingyuan Cao, 2022-2023  
Designed the microarchitecture and successfully taped-out a simplified prototype of the accelerator described in our ISCA'23 paper using TSMC 65nm technology.

## WORK EXPERIENCE

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|---|---|
| <b>Graduate Technical Intern</b><br><i>Intel Corporation</i>  | May 2023 - August 2023<br>(remote) Hillsboro, OR, USA |
| • Investigated heterogeneous accelerator architectures to accelerate SpMM. Reported to Ibrahim Hur. Research conducted in internship led to publication in HPCA'24.               |   |
| <b>Graduate Technical Intern</b><br><i>Intel Corporation</i>  | May 2022 - August 2022<br>(remote) Hillsboro, OR, USA |
| • Investigated synergies between hardware and software to maximize performance on the Intel Programmable Integrated Unified Memory Architecture (PIUMA). Reported to Ibrahim Hur. |   |

## TEACHING EXPERIENCE

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| <b>Private Tutor</b>  | 2016 – 2020<br>Patras, Greece |
| <b>Tutor</b><br><i>Proximo Education Center</i>   | 2020 – 2021<br>Patras, Greece |
| • Gave lectures and tutored undergraduate students in preparation for their exams in a variety of electrical and computer engineering subjects. |                               |

## PROFESSIONAL MEMBERSHIPS

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### **Student Member**

May 2023 – present

*ACM*

## COMMUNITY AND LEADERSHIP

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### **President**

September 2021 – December 2022

*Hellenic Students Association (HSA) at UIUC (graduate section)*

*Urbana, IL, USA*

### **Member**

2017 – 2020

*ECE Undergraduate Student Council at University of Patras*

*Patras, Greece*

## TECHNICAL SKILLS

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**Programming Languages:** C/C++, Python, Matlab, Shell/Bash scripting, Perl, VHDL, Verilog

**Parallel Programming:** OpenMP, MPI, Posix Threads, CUDA

**Frameworks/Libraries:** Simulink, Vivado, Vivado HLS, Cadence EDA tools, TensorFlow, PyTorch, Deep Graph Library

**Microarchitectural Simulators and Tools:** SST, gem5, ChampSim, Accel-Sim, DRAMSim, CACTI, McPAT

**Development Tools:** git, CMake

## HOBBIES

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- FIDE rated chess player - member of the team that won the bronze medal in the National Student Chess Competition (2013).
- Guitar and Greek traditional instruments player.