Georgios Vavouliotis | Curriculum Vitae

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Profile

I earned my diploma on Electrical and Computer Engineering from the National Technical University of Athens (NTUA). Currently, I am a 3rd year Ph.D. student in Computer Science at Universitat Politècnica de Catalunya (UPC) and Barcelona Supercomputing Center (BSC-CNS). My supervisors are Dr. Marc Casas Guix from BSC-CNS and Dr. Lluc Alvarez from UPC. Moreover, I collaborate with Prof. Daniel A. Jiménez from Texas A&M University and Prof. Boris Grot from the University of Edinburgh. My research aims at designing intelligent microarchitectural prediction/prefetching mechanisms for the cache and the TLB hierarchy.

Areas of (Research) Interest

Computer Architecture, High Performance Computing (HPC) Systems, Machine Learning for Computer Architecture; identifying and exploiting the predictability of programs to design microarchitectural prefetching/prediction mechanisms for the cache and the TLB hierarchy, improving the cache/TLB management, and leveraging machine learning algorithms to design intelligent microarchitectural components.

Education

○ **Universitat Politècnica de Catalunya (UPC)**   **Barcelona**
Doctor of Philosophy (Ph.D.)   *September 2018-now*
Leveraging Artificial Intelligence Algorithms for Hardware Prediction

○ **National Technical University of Athens (NTUA)**   **Athens**
Diploma on Electrical & Computer Engineering, ***300 ECTS***, ***GPA: 8.9/10***   *2012-March 2018*

Academic Directions

- Computer Systems & Software
- Computer Networks and Networks Security
- Signal Processing, Automatic Control and Robotics

Diploma Thesis

Performance Analysis of TLB Prefetching Mechanisms, ***GPA: 10/10***

○ **General Lyceum, Chalkida, Greece**   **Chalkida**
Apolytirion, ***Top 0.2%*** *in National Qualification Exams,* ***GPA: 19.5/20***   *2009-2012*

Research Experience

Barcelona Supercomputing Center (BSC-CNS) **Barcelona**
Researcher at Computer Architecture & Operating Systems Group (CAOS) *September 2018–now*

National Technical University of Athens (NTUA) **Athens**
Research Student at Computer Systems Laboratory (CSLab) *February 2018–July 2018*

Participation in Projects

SOW 5.3 - Intel and BSC-CNS Collaboration **Barcelona**
Barcelona Supercomputing Center (BSC-CNS) *September 2018–now*

High Performance Computing VII **Barcelona**
Barcelona Supercomputing Center (BSC-CNS) *September 2018–now*

Publications

[1] **Georgios Vavouliotis**, Lluc Alvarez, Boris Grot, Daniel A. Jiménez, Marc Casas Guix, ***Morrigan: A Composite Instruction TLB Prefetcher***. Proceedings of the 54th IEEE/ACM International Symposium on Microarchitecture (MICRO), Virtual, October 2021.

[1] **Georgios Vavouliotis**, Lluc Alvarez, Vasileios Karakostas, Konstantinos Nikas, Nectarios Koziris, Daniel A. Jiménez, Marc Casas Guix, ***Exploiting Page Table Locality for Agile TLB Prefetching***. Proceedings of the 48th International Symposium on Computer Architecture (ISCA), Virtual, June 2021.

[2] **Georgios Vavouliotis**, Lluc Alvarez, Daniel A. Jiménez, Marc Casas Guix, *Cost-Effective Instruction TLB Prefetching*. Second Young Architect Workshop (YArch 2020). In conjunction with The 25th ACM International Conference on Architectural Support for Programming Languages and Operating Systems (ASPLOS), Virtual, March 2020.

[3] **Georgios Vavouliotis**, Goumas Georgios, *"Performance Analysis of TLB Prefetching Mechanisms"*. Book of my diploma thesis.

Technical Reviewer for Conferences

18th ACM International Conference on Computing Frontiers (CF'21)
Sub-reviewer

IEEE Supercomputing Conference (SC'21)
Sub-reviewer

Teaching Experience

Private Tutor **Athens**
During my Diploma I was giving private lectures to: *2013–2018*

- **Undergraduate students of Computer Science Department**
  C programming, Computer Architecture, Operating Systems, Automatic Control

- **High school students**
  Mathematics, Physics

○ **Lab Assistant at National Technical University of Athens (NTUA)** — Athens
  C programming — *2013-2017*

Seminars and Training Courses

○ **Summer Schools**
*Participation in accredited Summer Schools (**certification provided**)*

- **HPC Architectures for Artificial Intelligence and Dedicated Applications**
  *Provided by **ACM-Europe**, 30 - 3 August 2021*

- **HPC Architectures for Artificial Intelligence and Dedicated Applications**
  *Provided by **ACM-Europe**, 17 - 24 July 2019*

○ **Seminars**
*Participation in accredited seminars (**certification provided**)*

- **Introduction to Big Data & Practical Data Analytics for Solving Real World Problems**
  *Provided by **PACT BSC-CNS**, February 2021*

- **Introduction to Heterogenous Memory Usage**
  *Provided by **PACT BSC-CNS**, February 2019*

○ **Online Courses (MOOCs)**
*Courses offered by accredited universities and training programs (**certification provided**)*

- **Machine Learning**
  *Provided by **Stanford University** (Prof. Andrew Ng), May 2018 - July 2018, **GPA: 10/10***
  · Supervised Learning (Regression Models, SVMs, NN)
  · Unsupervised Learning (Clustering, Dimensionality Reduction)

- **Advanced Programming with Python**
  *Provided by **Mathesis Online Platform**, March 2018 - April 2018, **GPA: 10/10***
  · Object Oriented Programming
  · Data Storage (sqlite3, pickle, JSON)
  · Graphic Interface Programming and Game Development

Technical and Personal skills

○ **Programming Languages:**
  - Advanced knowledge: C
  - Working knowledge: C++, Python, Matlab, Assembly (8085, 8086, AVR), SML/NJ, HTML

○ **Tools:**
  - Advanced knowledge: Unix Bash, LaTeX, SVN
  - Working knowledge: Git, CACTI, MS Office

○ **Simulators:**
  - Advanced knowledge: ChampSim

○ **General Business Skills:**
  - Ability to work with a team

- Very good presentation skills
- Able to write well organized and structured reports

Honors and Awards

○ **2019 FPI Doctoral Fellowship** **Barcelona**
Funded by Spanish Government (MINECO) *2019-2022*

○ **Mathematics Award - National Technical University of Athens (NTUA)** **Athens**
Excellent marks in all mathematical courses during the first two (2) years. *2014*

○ **"The Great Moment of Education" Eurobank EFG Scholarship** **Chalkida**
Highest rank in National Qualifications Exams in my school *2012*

Affiliations

○ Affiliated PhD student in HiPEAC (European Network of Excellence on High Performance and Embedded Arcitecture and Compilation)

Languages

○ **Greek** (Native)   ○ **Italian** (Beginner)
○ **English** (B2 (FCE, KPG))   ○ **Spanish** (Beginner)

Personal Interests and extra-curricular activity

○ Cooking   ○ Basketball   ○ Writing
○ Challenges   ○ Travelling   ○ Cinema

References

References available upon request.