

Short Bio

I earned my diploma on Electrical and Computer Engineering from the National Technical University of Athens (NTUA). Currently, I am a 4th 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 and Dr. Lluc Alvarez. Moreover, I collaborate with Prof. Daniel A. Jiménez and Prof. Paul V. Gratz from Texas A&M University, Prof. Boris Grot from the University of Edinburgh, and Prof. Vasileios Karakostas from NTUA. My research mainly aims at designing μ architectural prediction/prefetching mechanisms for virtual memory systems.

Areas of (Research) Interest

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

Education

- **Universitat Politècnica de Catalunya (UPC)** **Barcelona**
Doctor of Philosophy (Ph.D.) **Sept 2018–Nov 2022**
Advanced Hardware Prefetching in Virtual Memory Systems
- **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

- **Huawei Zurich Research Center** **Zurich**
Research Internship **November 2021–April 2022**
Hardware Accelerated Java Garbage Collection
- **Barcelona Supercomputing Center (BSC-CNS)** **Barcelona**
Researcher at Computer Architecture & Operating Systems Group **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**

Peer-Reviewed Publications

- [1] **Georgios Vavouliotis**, Gino Chancon, Lluc Alvarez, Paul V. Gratz, Daniel A. Jiménez, Marc Casas, [Page Size Aware Cache Prefetching](#). Proceedings of the 55th IEEE/ACM International Symposium on Microarchitecture (MICRO), Chicago, October 2022.
- [2] **Georgios Vavouliotis**, Lluc Alvarez, Boris Grot, Daniel A. Jiménez, Marc Casas, [Morrigan: A Composite Instruction TLB Prefetcher](#). Proceedings of the 54th IEEE/ACM International Symposium on Microarchitecture (MICRO), Virtual, October 2021.
- [3] **Georgios Vavouliotis**, Gino Chancon, Lluc Alvarez, Paul V. Gratz, Daniel A. Jiménez, Marc Casas, [Leveraging Page Size Information to Enhance Data Cache Prefetching](#). Poster at the 2021 ACM Summer School on HPC Computer Architectures for AI and Dedicated Applications, Virtual, August 2021. [**Best Poster Award**]
- [4] **Georgios Vavouliotis**, Lluc Alvarez, Vasileios Karakostas, Konstantinos Nikas, Nectarios Koziris, Daniel A. Jiménez, Marc Casas, [Exploiting Page Table Locality for Agile TLB Prefetching](#). Proceedings of the 48th International Symposium on Computer Architecture (ISCA), Virtual, June 2021. Also presented as a [Poster](#) at the 49th International Symposium on Computer Architecture (ISCA), New York, June 2022.
- [5] **Georgios Vavouliotis**, Lluc Alvarez, Marc Casas, [Pushing the envelope on free TLB prefetching](#). Proceedings of the 8th BSC Doctoral Symposium, Virtual, May 2021.
- [6] **Georgios Vavouliotis**, [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.
- [7] **Georgios Vavouliotis**, Goumas Georgios, ["Performance Analysis of TLB Prefetching Mechanisms"](#). Book of my diploma thesis.

Invited Talks

- **Page Size Aware Cache Prefetching** **Chicago**
55th IEEE/ACM International Symposium on Microarchitecture (MICRO) *October 2022*
- **Morrigan: A Composite Instruction TLB Prefetcher** **Zurich**
Huawei Zurich Research Center *December 2021*
- **Morrigan: A Composite Instruction TLB Prefetcher** **Virtual**
54th IEEE/ACM International Symposium on Microarchitecture (MICRO) *October 2021*
- **Leveraging Page Size Information to Enhance Data Cache Prefetching** **Virtual**
ACM School on HPC Computer Architectures for AI and Dedicated Applications *August 2021*
- **Exploiting Page Table Locality for Agile TLB Prefetching** **Virtual**
48th International Symposium on Computer Architecture (ISCA) *June 2021*
- **Pushing the Envelope on Free TLB Prefetching** **Virtual**
8th BSC Doctoral Symposium *May 2021*

Technical Reviewer for Conferences

- **IEEE Supercomputing Conference (SC'21)**
Sub-reviewer
- **IEEE Transactions on Computers (2021)**
Reviewer
- **18th ACM International Conference on Computing Frontiers (CF'21)**
Sub-reviewer

Teaching Experience

- **Private Tutor** **Athens**
C programming, Computer Architecture, Automatic Control for undergraduate students *2013–2018*
- **Lab Assistant at National Technical University of Athens (NTUA)** **Athens**
C programming *2013-2017*

Technical and Personal Skills

- **Programming Languages**
 - Advanced knowledge: C
 - Working knowledge: C++, Python, Matlab, Java, 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

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| ○ Travel Grant for MICRO'22 | Chicago |
| ○ <i>MICRO 2022 Conference</i> | 2022 |
| ○ Travel Grant for ISCA'22 | New York |
| ○ <i>ISCA 2022 Conference</i> | 2022 |
| ○ HiPEAC 2021 Paper Award | Virtual |
| ○ <i>For the MICRO'21 paper</i> | 2021 |
| ○ HiPEAC 2021 Paper Award | Virtual |
| ○ <i>For the ISCA'21 paper</i> | 2021 |
| ○ Best Poster Award | Virtual |
| ○ <i>2021 ACM School on HPC Computer Architectures for AI and Dedicated Applications</i> | 2021 |
| ○ 2019 FPI Doctoral Fellowship | Barcelona |
| ○ <i>Funded by Spanish Government (MINECO)</i> | 2019-2022 |
| ○ Travel Grant for ASPLOS'20 | Lausanne/Virtual |
| ○ <i>ASPLOS 2020 Conference</i> | 2020 |
| ○ Mathematics Award - National Technical University of Athens (NTUA) | Athens |
| ○ <i>Excellent marks in all mathematical courses during the first two (2) years.</i> | 2014 |
| ○ "The Great Moment of Education" Eurobank EFG Scholarship | Chalkida |
| ○ <i>Highest rank in National Qualifications Exams in my school</i> | 2012 |

Selected Press

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| ○ Page Size Aware Cache Prefetching | easypref.net |
| ○ <i>October Newsletter of easypref.net – Among the Most Interesting MICRO '22 Papers</i> | Oct 2022 |

Languages

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| ○ Greek (Native) | ○ English | ○ Italian (Beginner) | ○ Spanish (Beginner) |
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References

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| ○ Daniel A. Jiménez | djimenez@cse.tamu.edu |
| ○ <i>Texas A&M University</i> | |
| ○ Boris Grot | boris.grot@ed.ac.uk |
| ○ <i>University of Edinburgh</i> | |
| ○ Marc Casas | marc.casas@bsc.es |
| ○ <i>Universitat Politècnica de Catalunya, Barcelona Supercomputing Center</i> | |
| ○ Lluc Alvarez | lluc.alvarez@bsc.es |
| ○ <i>Universitat Politècnica de Catalunya, Barcelona Supercomputing Center</i> | |