

## 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 from BSC-CNS and Dr. Lluç 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 mainly 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

- **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*

## Publications

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- [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), 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

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- **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

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- **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

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- **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)**
- *C programming*

**Athens**  
2013-2017

## Seminars and Training Courses

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- **Summer Schools**
- *Participation in accredited Summer Schools (**certification provided**)*
  - **HPC Architectures for Artificial Intelligence and Dedicated Applications**
  - *Provided by **ACM-Europe**, 17 - 24 July 2019 & 30 - 3 August 2021*
- **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***
  - **Advanced Programming with Python**
  - *Provided by **Mathesis Online Platform**, March 2018 - April 2018, **GPA: 10/10***

## Technical and Personal Skills

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- **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

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- **Travel Grant for MICRO'22**
- *MICRO 2022 Conference*
- **Travel Grant for ISCA'22**
- *ISCA 2022 Conference*
- **HiPEAC 2021 Paper Award**
- *For the [MICRO'21 paper](#)*
- **HiPEAC 2021 Paper Award**
- *For the [ISCA'21 paper](#)*
- **Best Poster Award**
- *2021 ACM School on HPC Computer Architectures for AI and Dedicated Applications*
- **2019 FPI Doctoral Fellowship**
- *Funded by Spanish Government (MINECO)*

**Chicago**  
2022

**New York**  
2022

**Virtual**  
2021

**Virtual**  
2021

**Virtual**  
2021

**Barcelona**  
2019-2022

- **Travel Grant for ASPLOS'20** **Lausanne/Virtual**  
*ASPLOS 2020 Conference* *2020*
- **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*

## Languages

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- Greek (Native)
- English
- Italian (Beginner)
- Spanish (Beginner)

## References

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