

# Georgios Vavouliotis

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## Research Interests

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**Computer Architecture, High Performance Computing, Machine Learning for Computer Architecture, Data Centers;** identifying and exploiting the predictability of programs to design  $\mu$ architectural prefetching and prediction mechanisms for the cache and the TLB hierarchy, improving cache/TLB management for emerging applications with large data and code footprints, leveraging machine learning algorithms to design intelligent  $\mu$ architectural components, and re-thinking  $\mu$ architectural designs for server and data center applications.

## Education

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○ **Universitat Politècnica de Catalunya (UPC)** **Barcelona**  
*Doctor of Philosophy (Ph.D.), Advisors: Dr. Marc Casas, Dr. Lluc Alvarez* *Sept 2018-Dec 2022*  
**Advanced Hardware Prefetching in Virtual Memory Systems**

○ **National Technical University of Athens (NTUA)** **Athens**  
*Diploma (M.Eng.) on Electrical & Computer Engineering (M.Sc. equivalent), GPA: 8.9/10* *2012-March 2018*

### Academic Directions.....

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

## Employment

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○ **Huawei Zurich Research Center** **Zurich**  
*Postdoctoral Researcher* *Feb 2023–now*

○ **Huawei Zurich Research Center** **Zurich**  
*Research Internship* *Nov 2021–April 2022*  
*Impact of Concurrent Java Garbage Collectors on Cache Locality*

○ **Barcelona Supercomputing Center (BSC-CNS)** **Barcelona**  
*Researcher at Computer Architecture & Operating Systems Group* *Sept 2018–Dec 2022*

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

## Honors and Awards

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○ **HiPEAC 2022 Paper Award** **Chicago**  
*For the [Page Size Aware Cache Prefetching](#) paper* *2022*

○ **Travel Grant for MICRO'22** **Chicago**  
*MICRO 2022 Conference* *2022*

○ **Travel Grant for ISCA'22** **New York**  
*ISCA 2022 Conference* *2022*

○ **HiPEAC 2021 Paper Award** **Virtual**  
*For the [Morrigan: A Composite Instruction TLB Prefetcher](#) paper* *2021*

○ **HiPEAC 2021 Paper Award** **Virtual**  
*For the [Exploiting Page Table Locality for Agile TLB Prefetching](#) paper* *2021*

○ **Best Poster Award** **Virtual**  
*2021 ACM School on HPC Computer Architectures for AI and Dedicated Applications* *2021*

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

## Peer-Reviewed Conference 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), Chicago, Oct 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, Oct 2021.
- [3] **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.

## Peer-Reviewed Journal/Workshop Publications and Posters

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- [1] **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, Aug 2021. [[Best Poster Award](#)]
- [2] **Georgios Vavouliotis**, Lluc Alvarez, Marc Casas, [Pushing the envelope on free TLB prefetching](#). Proceedings of the 8th BSC Doctoral Symposium, Virtual, May 2021.
- [3] **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.
- [4] **Georgios Vavouliotis**, Goumas Georgios, ["Performance Analysis of TLB Prefetching Mechanisms"](#). Book of my diploma thesis.

## Invited Talks

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- **Advanced Hardware Prefetching in Virtual Memory Systems** **Athens**  
[6th Computing Systems Research Day @ CSLab](#) Jan 2023
- **Page Size Aware Cache Prefetching** **Chicago**  
[55th IEEE/ACM International Symposium on Microarchitecture \(MICRO\)](#) Oct 2022
- **Morrigan: A Composite Instruction TLB Prefetcher** **Zurich**  
[Huawei Zurich Research Center](#) Dec 2021
- **Morrigan: A Composite Instruction TLB Prefetcher** **Virtual**  
[54th IEEE/ACM International Symposium on Microarchitecture \(MICRO\)](#) Oct 2021
- **Leveraging Page Size Information to Enhance Data Cache Prefetching** **Virtual**  
[ACM School on HPC Computer Architectures for AI and Dedicated Applications](#) Aug 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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- **ACM Transactions on Architecture and Code Optimization (TACO'23)**  
*Reviewer*

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

## Teaching Experience

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- **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

## Selected Press

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- **TCuArch Interview** **youtube**  
*What attracted you to research computer architecture and systems?* Dec 2022
- **Page Size Aware Cache Prefetching** **easypref.net**  
*Oct Newsletter of easypref.net – Among the Most Interesting MICRO '22 Papers* Oct 2022

## Languages

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