

# Konstantinos Kanellopoulos

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*Curriculum Vitae*

## Contact Info

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Github <https://github.com/konkanello>  
Google Scholar <https://scholar.google.com/citations?user=6QgXle8AAAAJ>

## Education

- 2020–Present **PhD Candidate**, *SAFARI Research Group*, ETH Zurich.  
**Advisor:** Prof. Onur Mutlu
- 2018–2020 **Research Assistant**, *SAFARI Research Group*, ETH Zurich.  
**Advisor:** Prof. Onur Mutlu
- 2012–2017 **Diploma in Computer Science (5-year joint degree, 300 ECTS)**, *School of Electrical and Computer engineering*, National Technical University of Athens.  
*GPA – 7.8/10*  
**Major** Computer Systems, Computer Software **Minor** Computer Networks  
**Thesis Title:** "Optimization techniques for applications with irregular memory accesses"  
**Advisor:** Prof. Georgios Goumas
- 2006–2012 **High school**, *Greek-French School of Ursulines*, GPA 19.2/20.  
Ranked 1st among 80 students

## Publications

- 2023 Kanellopoulos et al. **"IMPACT: Amplifying Timing Covert Channels Using Processing-in-Memory Operations"** Pending submission to ISCA 2024
- 2023 Konstantinos Kanellopoulos, Rahul Bera, Kosta Stojiljkovic, Nisa Bostanci, Can Firtina, Rachata Ausavarungnirun, Rakesh Kumar, Nastaran Hajinazar, Mohammad Sadrosadati, Nandita Vijaykumar, Onur Mutlu  
**"Utopia: Efficient Address Translation using Hybrid Virtual-to-Physical Address Mapping"** MICRO 2023

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- 2023 Konstantinos Kanellopoulos, Hong Chul Nam, F. Nisa Bostanci, Rahul Bera, Mohammad Sadrosadati, Rakesh Kumar, Davide Basilio Bartolini, Onur Mutlu  
**"Victima: Drastically Increasing Address Translation Reach by Leveraging Underutilized Cache Resources"** MICRO 2023 *Distinguished Artifact Award*
- 2023 Konstantinos Kanellopoulos, Konstantinos Sgouras, Onur Mutlu **"Virtuoso: An Open-Source, Comprehensive and Modular Simulation Framework for Virtual Memory Research"** MICRO SRC 2023, 3rd place
- 2023 Ataberk Olgun, Juan Gomez-Luna, Konstantinos Kanellopoulos, Behzad Salami, Hasan Hassan, Oguz Ergin, Onur Mutlu  
**"PiDRAM: A Holistic End-to-end FPGA-based Framework for Processing-in-DRAM"** TACO 2023
- 2023 Harshita Gupta, Mayank Kabra, Juan Gómez-Luna, Konstantinos Kanellopoulos, Onur Mutlu  
**"Evaluating Homomorphic Operations on a Real-World Processing-In-Memory System"** IISWC 2023
- 2023 Nika Mansouri-Ghiasi, Nandita Vijaykumar, Geraldo F. Oliveira, Lois Orosa, Ivan Fernandez, Mohammad Sadrosadati, Konstantinos Kanellopoulos, Nastaran Hajinazar, Juan Gómez-Luna, Onur Mutlu  
**"ALP: Alleviating CPU-Memory Data Movement Overheads in Memory-Centric Systems"** IEEE TETC 2023
- 2022 Rahul Bera, Konstantinos Kanellopoulos, Shankar Balachandran, David Novo, Ataberk Olgun, Mohammad Sadrosadati, Onur Mutlu  
**"Hermes: Accelerating Long-Latency Load Requests via Perceptron-Based Off-Chip Load Prediction"** MICRO 2022 *Best Paper Award*
- 2022 Lois Orosa, Skanda Koppula, Yaman Umuroglu, Konstantinos Kanellopoulos, Juan Gómez-Luna, Michaela Blott, Kees A. Vissers, Onur Mutlu  
**"EcoFlow: Efficient Convolutional Dataflows for Low-Power Neural Network Accelerators"** Arxiv 2022
- 2022 Damla Senol Cali, Konstantinos Kanellopoulos, Joël Lindegger, Zülal Bingöl, Gurpreet S. Kalsi, Ziyi Zuo, Can Firtina, Meryem Banu Cavlak, Jeremie S. Kim, Nika Mansouri-Ghiasi, Gagandeep Singh, Juan Gómez-Luna, Nour Almadhoun Alserr, Mohammed Alser, Sreenivas Subramoney, Can Alkan, Saugata Ghose, Onur Mutlu  
**"SeGraM: A Universal Hardware Accelerator for Genomic Sequence-to-Graph and Sequence-to-Sequence Mapping"** ISCA 2022
- 2022 Nika Mansouri-Ghiasi, Mohammad Sadrosadati, Geraldo F. Oliveira, Konstantinos Kanellopoulos, Rachata Ausavarungnirun, Juan Gómez-Luna, Aditya Manglik, João Dinis Ferreira, Jeremie S. Kim, Christina Giannoula, Nandita Vijaykumar, Jisung Park, Onur Mutlu  
**"RevaMp3D: Architecting the Processor Core and Cache Hierarchy for Systems with Monolithically-Integrated Logic and Memory"** Arxiv 2022
- 2022 Nandita Vijaykumar, Ataberk Olgun, Konstantinos Kanellopoulos, F. Nisa Bostanci, Hasan Hassan, Mehrshad Lotfi, Phillip B. Gibbons, Onur Mutlu  
**"MetaSys: A Practical Open-source Metadata Management System to Implement and Evaluate Cross-layer Optimizations"** TACO 2022

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- 2021 Maciej Besta, Raghavendra Kanakagiri, Grzegorz Kwasniewski, Rachata Ausavarungnirun, Jakub Beránek, Konstantinos Kanellopoulos, Kacper Janda, Zur Vonarburg-Shmaria, Lukas Gianinazzi, Ioana Stefan, Juan Gómez-Luna, Jakub Golinowski, Marcin Copik, Lukas Kapp-Schwoerer, Salvatore Di Girolamo, Nils Blach, Marek Konieczny, Onur Mutlu, Torsten Hoefler  
**"SISA: Set-Centric Instruction Set Architecture for Graph Mining on Processing-in-Memory Systems"** MICRO 2021
- 2021 Rahul Bera, Konstantinos Kanellopoulos, Anant Nori, Taha Shahroodi, Sreenivas Subramoney, Onur Mutlu  
**"Pythia: A Customizable Hardware Prefetching Framework Using Online Reinforcement Learning"** MICRO 2021
- 2020 Abdullah Giray Yaglikçi, Minesh Patel, Jeremie S. Kim, Roknoddin Azizi, Ataberk Olgun, Lois Orosa, Hasan Hassan, Jisung Park, Konstantinos Kanellopoulos, Taha Shahroodi, Saugata Ghose, Onur Mutlu  
**"BlockHammer: Preventing RowHammer at Low Cost by Blacklisting Rapidly-Accessed DRAM Rows"** HPCA 2020
- 2020 Nastaran Hajinazar, Pratyush Patel, Minesh Patel, Konstantinos Kanellopoulos, Saugata Ghose, Rachata Ausavarungnirun, Geraldo F. Oliveira, Jonathan Appavoo, Vivek Seshadri, Onur Mutlu  
**"The Virtual Block Interface: A Flexible Alternative to the Conventional Virtual Memory Framework"** Hajinazar et al. ISCA 2020
- 2019 Konstantinos Kanellopoulos, Nandita Vijaykumar, Christina Giannoula, Roknoddin Azizi, Skanda Koppula, Nika Mansouri-Ghiasi, Taha Shahroodi, Juan Gómez-Luna, Onur Mutlu  
**"SMASH:Co-designing Software Compression and Hardware-Accelerated Indexing for Efficient Sparse Matrix Operations"** MICRO 2019
- 2019 Skanda Koppula, Lois Orosa, Abdullah Giray Yaglikçi, Roknoddin Azizi, Taha Shahroodi, Konstantinos Kanellopoulos, Onur Mutlu:  
**"EDEN: Enabling Energy-Efficient, High-Performance Neural Network Inference Using Approximate DRAM"** MICRO 2019
- 2018 Konstantinos Kanellopoulos **"Prefetch-Process-Thread-Alternation to Speed Up Dijkstra's Algorithm"** MultiProg 2018 HiPEAC workshop

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## Experience

### Academic

2018-Present **Mentoring.**

- Ian Ganz (Bachelor Student @ETH Zurich) Exploring techniques to enable heterogeneous address translation mechanisms
- Hong Chul Nam (Master Student @ETH Zurich)  
Working on harnessing underutilized processor resources to accelerate address translation
- Jeril Vathaloor (Bachelor Student @ETH Zurich)  
Working on an open-source simulation tool that enables VM studies
- Konstantinos Sgouras (Bachelor Student @NKUA)  
Working on an open-source simulation tool that enables VM studies
- Kosta Stojiljkovic (Master Student @ETH Zurich)  
Working on new virtual memory abstractions to reduce address translation overheads.
- Meryem Banu Cavlak (Bachelor Student @Bilkent University)  
Working on new memory reordering techniques to accelerate memory accesses of sparse and irregular applications.

2018-Present **Sub-reviewer.**

ISCA '19, '20, '21, '22, '23 - MICRO '19, '20, '21, '22, '23 - HPCA '19, '20, '21, '22, '23 - ASPLOS '19, '20, '21, '22, '23 - DSN '2023 - DAC '21 - IEEE Micro Top Picks '19, '20, '21, '22 - Eurosys '23

2020-Present **Organizer**, *Project and Seminar on Intelligent Architectures*, ETH Zurich.

2020-Present **Teaching Assistant**, *Computer Architecture (MSc)*, ETH Zurich.

2019-Present **Teaching Assistant**, *Design of Digital Circuits(BSc)*, ETH Zurich.

2018 **Teaching Assistant**, *Advanced Computer Architecture course*, National Technical University of Athens.

2018 **Teaching Assistant**, *Operating systems course*, National Technical University of Athens.

2016–2017 **Junior Researcher**, *Computing Systems Laboratory*, National Technical University of Athens.

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## Undergraduate Projects

**Tomasulo's algorithm & Stream Buffer simulation tools (Intel PIN).**

Course: Advanced Computer Architecture Professor: N.Koziris 


**Crypto digital system (Real system with photos).**

Course: Digital Systems Lab Professor: C.Papadysseus 

**Distributed Hash Table using Chord (Java).**

Course: Distributed Systems Professor: N.Koziris 

**Database management system for microloans.**

Course: Database Systems Professor: N.Koziris 

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## Awards & Honours

- 2016 **Floyd-Warshall Parallel Programming Challenge**, *Achieved best execution time using the biggest input*, Course: Parallel Systems Professor: Georgios Goumas .
- 2012 **"The Great Moment for Education" Eurobank Scholarship**, Best school performance during National qualification exams .
- 2009 **Mathematics competition - Greek-French schools** , Ranked 3rd among 150 students.

## Technical Skills

- Basic Haskell
- Intermediate Java, Javascript, SQL
- Advanced C, C++, Python, Verilog, Kernel programming, Bash,  $\LaTeX$

## Computer Architecture Tools

- Simulators Intel Pin, Sniper Multi-Core simulator, ChampSim, Ramulator, ZSim
- RTL Chisel, RISC-V Design

## Languages

- Greek **Mothertongue**
- French **C2 Level**
- English **C2 Level**
- German **Entry Level (A2)**

## Interests

- Travelling
- Star Wars fan
- Blues Guitar Player
- Snowboarding

## References

- Professor Onur Mutlu** [omutlu@gmail.com](mailto:omutlu@gmail.com)
- Assistant Professor Nandita Vijaykumar** [nanditav17@gmail.com](mailto:nanditav17@gmail.com)
- Assistant Professor Rachata Ausavarungnirun** [r.ausavarungnirun@gmail.com](mailto:r.ausavarungnirun@gmail.com)
- Assistant Professor Georgios Goumas** [goumas@cslab.ece.ntua.gr](mailto:goumas@cslab.ece.ntua.gr)
- Professor Nectarios Koziris** [nkoziris@cslab.ece.ntua.gr](mailto:nkoziris@cslab.ece.ntua.gr)
- Associate Professor Dimitrios Soudris** [dsoudris@microlab.ntua.gr](mailto:dsoudris@microlab.ntua.gr)

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