

## Nikolaos Tampouratzis

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**Personal Information:** Date of Birth: January 22<sup>th</sup>, 1990  
Nationality: Hellenic  
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### Education

- 2014 – 2018** **Ph.D**, Microprocessor and Hardware Lab, School of Electronic & Computer Engineering at Technical University of Crete.  
(Thesis: A novel Simulator for Heterogeneous Parallel and Distributed Systems)
- 2012 – 2014** **MSc**, Microprocessor and Hardware Lab, School of Electronic & Computer Engineering at Technical University of Crete.  
(Thesis: Hardware Accelerated Basic Blocks for Power-Aware Intercommunication in HPC and Embedded Systems)
- 2007 – 2012** **BSc**, Computer Science at University of Crete.  
(Thesis: Description of USB 3.0 Protocol Layer in Verilog and implementation in FPGA and ASIC flows) (**GPA:** 7.73)
- 2004 – 2007** High School General Lyceum of Sitia/Greece (**GPA:** 17.6)

### Foreign Languages

- ✓ Certificate of Proficiency in English (ECPE), University of Michigan, 2015
- ✓ Certificate of Competency in English (ECCE), University of Michigan, 2012

## Professional Experience

- 2018 – Present** Post Doc Researcher at Aristotle University of Thessaloniki with specialization in embedded/hardware systems development as well as simulators for Heterogeneous Parallel and Distributed Systems (Postdoctoral Researcher Scholarship implemented by the State Scholarships Foundation (IKY))
- 2020 – Present** Senior Computer Engineer at Exapsys Solutions in the context of European Project H2020 – EUROEXA ([www.exapsys.eu](http://www.exapsys.eu))
- 2018 – 2020** Senior Computer Engineer at Synelixis Solutions Ltd. in the context of European Project H2020 – EUROEXA ([www.synelixis.com](http://www.synelixis.com))
- 2014 – 2018** Research Associate / Engineer, Telecommunication Systems Institute ([www.tsi.gr](http://www.tsi.gr)) / Microprocessor and Hardware Laboratory (MHL), Electronics and Computer Engineering School, Technical University of Crete in the following projects:
- **COSSIM** – EU Project
  - **ECOSCALE** – EU Project
  - **HERMES** – National Participation
  - **AFORMI** – ARISTEA Project
  - **nSHIELD** – EU Project
- 2013 – 2014** Postgraduate scholarship of the Telecommunication Systems Institute ([www.tsi.gr](http://www.tsi.gr)) in the context of postgraduate studies and research in the following projects:
- **R3-COP** – EU Project
  - **HERMES** – EU Project

## Teaching Experience

- 2020 – 2021** Co-teaching of the Postgraduate Course "Sensor Technologies for the Internet of Things"
- 2020 – 2021** Supervisor of the Hardware - Software Systems Design Lab for 1 semester – Implementation of accelerator using Alveo FPGA – (9th semester, School of Electrical & Computer Engineering, Aristotle University of Thessaloniki)
- 2019 – 2020** Supervisor of the HY1901 Special Computer Architectures Lab for 1 semester – Implementation of accelerator using FPGA – (9th semester, School of Electrical & Computer Engineering, Aristotle

University of Thessaloniki)

- 2019 – 2020** Supervisor of the HY075 Computer architecture Lab for 1 Semester – An introduction to simulation complex systems using GEM5 (7th semester, School of Electrical & Computer Engineering, Aristotle University of Thessaloniki)
- 2018 – 2019** Supervisor of the Microcomputer systems Lab for 1 semester – An introduction to AVR (7th semester, School of Electrical & Computer Engineering, Aristotle University of Thessaloniki)
- 2018 – 2019** Supervisor of the HY0901 Microprocessors and peripherals Lab for 1 semester – An introduction to AVR peripherals (8th semester, School of Electrical & Computer Engineering, Aristotle University of Thessaloniki)
- 2013 – 2018** Supervisor of the Computer Organization Lab (HRY 312) / Prof. I. Papaefstathiou & Prof. D. Pnevmatikatos, Technical University of Crete (VHDL implementation of a pipelined MIPS architecture)
- 2014 – 2018** Teaching Assistant, Logic synthesis (HRY 101) / Prof. I. Papaefstathiou & Prof. A. Dollas, Technical University of Crete (Abstract specification of desired circuit behavior)
- 2016 – 2017** Teaching Assistant, Digital Computers (HRY 201) / Prof. I. Papaefstathiou, Technical University of Crete (an introduction to assembly language in Mips architecture)
- 2017 – 2018** Teaching Assistant, Reconfigurable Digital Systems (HRY 591) / Prof. K. Georgopoulos, Technical University of Crete (an introduction to build an integrated accelerator using FPGAs)

### Journal Publications (newest to oldest)

- 1) Nikolaos Tampouratzis, Ioannis Papaefstathiou, Antonios Nikitakis, Andreas Brokalakis, Stamatis Andrianakis, Apostolos Dollas, Marco Marcon, and Emanuele Plebani. 2020. A Novel, Highly Integrated Simulator for Parallel and Distributed Systems. ACM Transactions

on Architecture and Code Optimization (TACO), 17, 1, Article 2 (March 2020), 28 pages. DOI: <https://doi.org/10.1145/3378934>

✓ Invited presentation in 15th International Conference on High Performance and Embedded Architectures and Compilers (HiPEAC), Budapest, Hungary, EU, January 2021.

- 2) A. Nikitakis, K. Makantasis, N. Tampouratzis and I. Papaefstathiou, "A Unified Novel Neural Network Approach and a Prototype Hardware Implementation for Ultra-Low Power EEG Classification", IEEE Transactions on Biomedical Circuits and Systems, vol. 13, no. 4, pp. 670-681, Aug. 2019. <https://doi.org/10.1109/TBCAS.2019.2916981>
- 3) N. Tampouratzis and I. Papaefstathiou, "A Novel, Simulator for Heterogeneous Cloud Systems that Incorporate Custom Hardware Accelerators," IEEE Transactions on Multi-Scale Computing Systems, vol. 4, no. 4, pp. 565-576, 1 Oct.-Dec. 2018. <https://doi.org/10.1109/TMSCS.2018.2879601>
- 4) Nikolaos Tampouratzis, Pavlos M. Mattheakis, and Ioannis Papaefstathiou. 2016. Accelerating Intercommunication in Highly Parallel Systems. ACM Transactions on Architecture and Code Optimization (TACO), 13, 4, Article 40 (December 2016), 25 pages. <https://doi.org/10.1145/3005717>  
 ✓ Invited presentation in 11th International Conference on High Performance and Embedded Architectures and Compilers (HiPEAC), Stockholm, Sweden, EU, January 2017.

### Conference Publications (newest to oldest)

- 1) A. Brokalakis, N. Tampouratzis, A. Nikitakis, St. Andrianakis, I. Papaefstathiou, Danilo Pau, Emanuele Plebani, Marco Paracchini, et al, "COSSIM: An Open-Source Integrated Solution to Address the Simulator Gap for Systems of Systems", 2018. 21st Euromicro Conference on Digital System Design (DSD), Prague, 2018, pp. 115-120. <https://doi.org/10.1109/DSD.2018.00033>
- 2) N. Tampouratzis, A. Brokalakis, A. Nikitakis, I. Papaefstathiou, St. Andrianakis, A. Dollas, M. Paracchini, M. Marcon, D.P. Pau, E. Plebani, "An Open-Source, Extendable, Highly-Accurate and Security-Aware Simulator for CCloud Applications", 2018. 21st Conference on Innovation in Clouds, Internet and Networks and Workshops (ICIN), Paris, 2018, pp. 1-3. <https://doi.org/10.23919/DATE.2017.7927071>

- 3) K. Georgopoulos, P. Malakonakis, N. Tampouratzis, A. Nikitakis, et al. "Comparing C and SystemC Based HLS Methods for Reconfigurable Systems Design", 14th International Symposium, Applied Reconfigurable Computing. Architectures, Tools, and Applications. Lecture Notes in Computer Science, vol 10824. Springer, Cham ARC 2018, Santorini, Greece, May 2-4, 2018. [https://doi.org/10.1007/978-3-319-78890-6\\_37](https://doi.org/10.1007/978-3-319-78890-6_37)
- 4) N. Tampouratzis, A. Nikitakis, A. Brokalakis, St. Andrianakis, I. Papaefstathiou, A. Dollas, An Open-Source Extendable, Highly-Accurate and Security Aware CPS Simulator, 2017. 13th International Conference on Distributed Computing in Sensor Systems (DCOSS), Ottawa, ON, 2017, pp. 81-88. <https://doi.org/10.1109/DCOSS.2017.15>
- 5) N. Tampouratzis, K. Georgopoulos and Y. Papaefstathiou, "A novel way to efficiently simulate complex full systems incorporating hardware accelerators,". Design, Automation & Test in Europe Conference & Exhibition (DATE), 2017, Lausanne, 2017, pp. 658-661. <https://doi.org/10.23919/DATE.2017.7927071>
- 6) K. Georgopoulos and G. Chrysos and P. Malakonakis and A. Nikitakis and N. Tampouratzis, A. Dollas, D. Pnevmatikatos, Y. Papaefstathiou. "An evaluation of vivado HLS for efficient system design". International Symposium ELMAR, Zadar, 2016, pp. 195-199. <https://doi.org/10.1109/ELMAR.2016.7731785>

### Invited Speaker

- 1) N. Tampouratzis, Hands on Hardware/Software Co-Design. IEEE Heterogeneous Cyber Physical Systems of Systems (HEPSoS) Seasonal School in November 2019 at Computer Lab «Vergina», building E of the Aristotle University of Thessaloniki ([link](#))
- 2) N. Tampouratzis, A. Brokalakis, "Simulation of Complex Systems Incorporating Hardware Accelerators", ARM Research Summit 2017, GEM5 Workshop, September 2017, Cambridge, UK. Workshop Link & Synopsis ([link](#)).
- 3) A. Brokalakis, N. Tampouratzis, "COSSIM: An Integrated Solution to Address the Simulator Gap for Parallel Heterogeneous Systems",

ARM Research Summit 2017, GEM5 Workshop, September 2017, Cambridge, UK. Workshop Link & Synopsis ([link](#)).

- 4) N. Tampouratzis, A. Nikitakis, A. Brokalakis, I. Papefstathiou, COSSIM: A Novel, Comprehensible, Ultra-Fast, Security-Aware CPS Simulator, Demonstration of the COSSIM framework at the University Booth of the DATE 2017 conference (Design, Automation and Test in Europe), March 2017, Lausanne, Switzerland ([link](#)).

## Technical Skills

### Hardware Description Languages:

- ✓ High Level Synthesis (HLS), System C Language, Verilog, VHDL, System Verilog Assertions

### Programming Languages:

- ✓ C/C++ (Pthreads, OpenMP, MPI, CUDA), Python, Java, JavaScript, C#, HTML, CSS, PHP, MySQL, nes-C, Assembly MIPS, Assembly AVR, Fortran

### Simulation & Programming Tools:

- ✓ GEM5 Simulator, OMNET++ Simulator, Open Virtual Platforms (OVP), Wordpress, National Instruments Labview system-design platform, Visual Studio, NetBeans

### Hardware Tools:

- ✓ Xilinx Vivado HLS, Cadence C-to-Silicon Compiler, Xilinx ISE Design Suite, Xilinx Vivado, Modelsim, SPIM, Magic VLSI Layout Tool

### Asynchronous teaching platforms:

- ✓ eclass, elearning (Auth)

### Desktop Tools:

- ✓ Microsoft Office, Open Office

### Operating Systems:

- ✓ Unix (Linux), Microsoft Windows

### Github Repositories

- ✓ <https://github.com/H2020-COSSIM>
- ✓ <https://github.com/ntampouratzis/ACSIM>

### Additional Information

- ✓ Winner of the HiPEAC Tech Transfer Awards 2020 ([link](#) - Dec 2020)
- ✓ Reviewer at journal Software: Practice and Experience (Feb 2020)
- ✓ Reviewer at conference Design, Automation and Test in Europe Conference 2019 (DATE 2019)
- ✓ Contribution on Gem5 Mailing List
- ✓ National Instruments Certification: Data Acquisition and Signal Conditioning at Technical University of Crete (17 May 2013)