

Nikolaos Tampouratzis

Address	Mavrokordatou 5 Thessaloniki/Greece Zip Code: 54645
Personal Information	Date of Birth: January 22th, 1990 Nationality: Hellenic Birth Location: Heraklion, Crete, Greece
Contact	Telephone No: +30 6973473651 / +30 2310827387 website: www.ntampouratzis.com e-mail: ntampouratzis@ihu.gr

Education

2014 – 2018	Doctor of Philosophy (Ph.D.), School of Electrical and Computer Engineering, Technical University of Crete (Title: An innovative simulator for heterogeneous parallel and distributed systems) (link)
2012 – 2014	Master of Science (M.Sc.), School of Electronic and Computer Engineering, Technical University of Crete (Title: Hardware acceleration of basic blocks to improve intercommunication in parallel and embedded systems)
2007 – 2012	Bachelor of Science (B.Sc.) in Computer Science, Department of Computer Science, School of Sciences and Engineering, University of Crete (Project: Description of the USB 3.0 network protocol in Verilog for FPGA and ASIC implementation) Grade: 7.73
2004 – 2007	High School General Lyceum of Sitia/Greece (GPA: 17.6)

Languages

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

Professional Experience

- 2024 – Today** Assistant Professor in **Digital Embedded Systems**, Department of Production Engineering and Management, School of Engineering, International Hellenic University
- 2020 – Σήμερα** Senior Computer Engineer at Exapsys (www.exapsys.eu) in the context of the following EU projects:
- **VITAMIN-V** – Ευρωπαϊκό έργο
 - **MEDIATE** – Ευρωπαϊκό έργο
 - **REDSEA** – Ευρωπαϊκό έργο
 - **EUROEXA** – Ευρωπαϊκό έργο
- 2023 – 2025** External Research Associate, Special Account for Research Funds (ELKE) of the Aristotle University of Thessaloniki (AUTH), for the following research projects:
- **AdVISer** – «RESEARCH – CREATE – INNOVATE»
 - **REDESIGN** – Funded by the Hellenic Foundation for Research and Innovation
- 2023 – 2025** External Research Associate, Special Account for Research Funds (ELKE) of the Technical University of Crete (TUC), for the following research projects:
- **OPTIMA** – EU Project
 - **REBECCA** – EU Project
- 2018 – 2022** Postdoctoral Researcher, Aristotle University of Thessaloniki (AUTH), focusing on the design and development of embedded systems and simulators (funded by a fellowship from the State Scholarships Foundation - IKY)
- 2018 – 2020** Senior Computer Engineer at Synelixis Solutions Ltd. in the context of European Project H2020 – EUROEXA (www.synelixis.com)
- 2015 – 2018** Research Associate / Engineer, Telecommunication Systems Institute (www.tsi.gr) / Microprocessor and Hardware Laboratory (MHL), Electronics and Computer Engineering School, Technical University of Crete in the following projects:
- **COSSIM** – Ευρωπαϊκό έργο
 - **ECOSCALE** – Ευρωπαϊκό έργο
 - **HERMES** – Εθνική Συμμετοχή
- 2014 – 2015** External Research Associate, Special Account for Research Funds (ELKE) of the Technical University of Crete (TUC), for the following projects:

- **AFORMI** – ARISTEA Project
- **nSHIELD** – Ευρωπαϊκό έργο

2013 – 2014 Postgraduate scholarship of the Telecommunication Systems Institute (www.tsi.gr) in the context of postgraduate studies and research in the following projects:

- **R3-COP** – Ευρωπαϊκό έργο
- **HERMES** – Ευρωπαϊκό έργο

Teaching Experience

2024 – Today	Lecturer / Instructor, Department of Production Engineering and Management, School of Engineering, International Hellenic University Course Taught: 'Microcomputers in Production', 'Electronic Systems', 'Advanced Digital Systems', 'Embedded Systems', 'Microcontrollers'
	• Supervised 10 Bachelor's theses • Member of the Three-Member Examining Committee for more than 15 Bachelor's theses • Academic Internship Supervisor
2020-2023	Co-teaching of the Postgraduate Course 'Sensor Technologies for the Internet of Things' (for 3 semesters), Department of Electrical and Computer Engineering, Aristotle University of Thessaloniki (AUTH)
2021-2022	Teaching of the course 'Low-Level Digital Hardware Systems II' (for 1 semester), 8th-semester elective course, Department of Electrical and Computer Engineering, Aristotle University of Thessaloniki (AUTH)
2021-2022	Teaching and full development of course material for 'Logic Design' (for 1 semester), a 1st-semester compulsory course with 399 enrolled students, Department of Electrical and Computer Engineering, Aristotle University of Thessaloniki (AUTH)
2021-2022	Co-teaching of the course 'Low-Level Digital Hardware Systems I' (for 1 semester), 7th-semester elective course, Department of Electrical and Computer Engineering, Aristotle University of Thessaloniki (AUTH)
2020 – 2022	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)
2017 – 2018	Supervisor for 'Reconfigurable Systems' Lab (for 1 semester), 8th semester elective course, School of Electrical and Computer Engineering, Technical University of Crete (TUC)
2016 – 2017	Laboratory Assistant for 'Digital Computers' (for 1 semester), 3rd-semester compulsory course, School of Electrical and Computer Engineering, Technical University of Crete (TUC)
2014 – 2018	Laboratory Assistant for 'Logic Design' (for 5 semesters), 1st-semester compulsory course, School of Electrical and Computer Engineering, Technical University of Crete (TUC)
2013 – 2018	Supervisor for 'Computer Organization' Lab (for 6 semesters), 5th-semester compulsory course, School of Electrical and Computer Engineering, Technical University of Crete (TUC)

Administrative duties

2024 – Today	Department of Production Engineering and Management, School of Engineering, International Hellenic University: Member of the Evaluation and Credential Verification Committee for the program 'Acquisition of Academic Teaching Experience in Young Scientists Holding a PhD' (evaluated 4 candidates)
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- Member of the Evaluation Committee for the verification of credentials of 5 PhD candidates applying for Academic Fellowships
- Member of the Department's Internship Committee
- Chair of the Three-Member Committee for the Decommissioning and Disposal of Fixed Assets
- Member of the Committee for the Updating of Internal and External Electors' Registries per Departmental Subject Area
- Alternate Member - Departmental Liaison for the Equal Access Unit of the International Hellenic University

Book Chapters

Author of the chapter 'Hands on Hardware / Software Co-Design' in the book 'Heterogeneous Cyber Physical Systems of Systems', River Publishers Series in Circuits and Systems, Feb. 2021, ISBN: 9788770222020 ([link](#)).

Journal Publications (newest to oldest)

- 1) Nikolaos Tampouratzis, Ioannis Papaefstathiou, Gabriel Gomez-Lopez, Miguel Sánchez De la Rosa, Jesus Escudero-Sahuquillo, Pedro Javier Garcia, "Distributed fast and accurate simulation platform for advanced ARM- and RISC-V-based HPC systems" in Journal of Supercomputing 81, 1484 (2025). <https://doi.org/10.1007/s11227-025-07972-7> ([link](#))
- 2) Angelos Athanasiadis, Nikolaos Tampouratzis, Ioannis Papaefstathiou, "An efficient open-source design and implementation framework for non-quantized CNNs on FPGAs", in Integration Journal, Volume 107, 2025, 102625, ISSN 0167-9260, <https://doi.org/10.1016/j.vlsi.2025.102625> ([link](#))
- 3) Maria Engracia Gomez, Julio Sahuquillo, Andrea Biagioni, Nikolaos Tampouratzis, et. al. , "RED-SEA Project: Towards a new-generation European interconnect", in Microprocessors and Microsystems, Volume 110, 2024, 105102, ISSN 0141-9331, <https://doi.org/10.1016/j.micpro.2024.105102> ([link](#))
- 4) N. Tampouratzis, P. Mousoulitis and I. Papaefstathiou, "A Novel Integrated Simulation Framework for Cyber-Physical Systems Modelling," in IEEE Transactions on Parallel and Distributed Systems,

- 5) Tsantikidou, Kyriaki, Nikolaos Tampouratzis, and Ioannis Papaefstathiou. 2021. "A Novel FPGA-Based Intent Recognition System Utilizing Deep Recurrent Neural Networks" *Electronics* 10, no. 20: 2495. <https://doi.org/10.3390/electronics10202495> ([link](#))
- 6) 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> ([link](#))
✓ Invited presentation in 15th International Conference on High Performance and Embedded Architectures and Compilers (HiPEAC), Budapest, Hungary, EU, January 2021.
- 7) 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> ([link](#))
- 8) 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> ([link](#))
- 9) 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> ([link](#))
✓ 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) Nikolaos Tampouratzis, Ioannis Papaefstathiou, "An Open-Source Distributed Simulation Framework for RISC-V Systems"

- incorporating Vector and Cryptographic Extensions". In Proceedings of the 23rd ACM International Conference on Computing Frontiers (CF '26). Association for Computing Machinery, New York, NY, USA, 49–57. <https://doi.org/10.1145/3801487.3801811> ([link](#))
- 2) Angelos Athanasiadis, Nikolaos Tampouratzis, Ioannis Papaefstathiou, "An open-source HLS fully parameterizable matrix multiplication library for AMD FPGAs", in 27th Euromicro Conference Series on Digital System Design (DSD) 2024 ([link](#))
 - 3) Nikolaos Tampouratzis and Ioannis Papaefstathiou, "Fast, Accurate and Distributed Simulation of novel HPC systems incorporating ARM and RISC-V CPUs", 2024. HPDC '24, June 3–7, 2024, Pisa, Italy. <https://doi.org/10.1145/3625549.3658816> ([link](#))
 - 4) Ramon Canal, Cristiano Chenet, Angelos Arelakis, Nikolaos Tampouratzis et al, "Vitamin-v: Virtual environment and tool-boxing for trustworthy development of risc-v based cloud services", in 2023 26th Euromicro Conference on Digital System Design (DSD), <https://doi.org/10.1109/DSD60849.2023.00050> ([link](#))
 - 5) P. Mousoulitis, N. Tampouratzis and I. Papaefstathiou, "SqueezeJet-3: An HLS-based Accelerator for Edge CNN Applications on SoC FPGAs," 2023 XXIX International Conference on Information, Communication and Automation Technologies (ICAT), Sarajevo, Bosnia and Herzegovina, 2023, pp. 1-6, <https://doi.org/10.1109/ICAT57854.2023.10171329> ([link](#))
 - 6) Andrea Biagioni, Paolo Cretaro, Ottorino Frezza, Nikolaos Tampouratzis, et al., "RED-SEA: Network Solution for Exascale Architectures," 2022 25th Euromicro Conference on Digital System Design (DSD), Maspalomas, Spain, 2022, pp. 712-719. <https://doi.org/10.1109/DSD57027.2022.00100> ([link](#))
 - 7) V. Daoulas, N. Tampouratzis, P. Mousoulitis and I. Papaefstathiou, "An Open-source Implementation of LSTM and GRU in the Ptolemy Simulation Framework," 2021 IEEE/ACM 25th International Symposium on Distributed Simulation and Real Time Applications (DS-RT), 2021, pp. 1-8, doi: 10.1109/DS-RT52167.2021.9576137 ([link](#)).
 - 8) A. Brokalakis, N. Tampouratzis, A. Nikitakis, St. Andrianakis, I. Papaefstathiou, Danilo Pau, Emanuele Plebani, Marco Paracchini, et all, "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> ([link](#))

- 9) 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/10.1109/ICIN.2018.8401578> ([link](#))
- 10) 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 ([link](#))
- 11) 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> ([link](#))
- 12) 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> ([link](#))
- 13) 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> ([link](#))

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

Desktop Tools:

- ✓ Microsoft Office, Open Office

Asynchronous teaching platforms:

- ✓ eclass, elearning (Auth), exams (ihu)

Operating Systems:

- ✓ Unix (Linux), MS Windows

Github Repositories

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

Additional Information

- ✓ ASPETE - Certificate of Pedagogical and Teaching Competence (Grade: 9.3/10)
- ✓ Reviewer, ACM Transactions on Design Automation of Electronic Systems
- ✓ Reviewer, The Journal of Supercomputing
- ✓ Reviewer, Special Issue 'FPGA-Based Reconfigurable Embedded Systems', MDPI Electronics
- ✓ Reviewer, 34th International Conference on Field-Programmable Logic and Applications (May 2024)
- ✓ 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 ([link](#) - 17 May 2013)
- ✓ National and Kapodistrian University of Athens (NKUA) – Training Certificate: "Introduction to Blockchain in Financial Services"