

Curriculum vitae

Dr. Lazaros Papadopoulos

1. Personal Information

Name: Lazaros Papadopoulos
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2. Education

- 2010 - 2016 School of Electrical and Computer Engineering, National Technical University of Athens.
PhD. Thesis: *Customization methodology of applications based on concurrent data structures in embedded systems.*
- 2005 – 2008 School of Electrical and Computer Engineering, Democritus University of Thrace.
MSc. Research area: *Design methodologies for low energy consumption.*
- 1999 – 2005 School of Electrical and Computer Engineering, Democritus University of Thrace.
Diploma of Electrical and Computer Engineering.
Degree: 7.35

3. Research Interests

- Edge computing
- Heterogeneous computing systems and accelerators
- Heterogeneous memory architectures: DRAM/NVM
- Methodologies and tools for programmable accelerators

4. Internships and Awards

- 2015: **HiPEAC collaboration grant.**
- 2007: ICSAMOS **best paper award:** “Systematic Data Structure Exploration of Multimedia and Network Applications realized Embedded Systems”
- 2022: 13th international Green and sustainable computing Conference **best paper award:** “Decision support for GPU acceleration by predicting energy savings and programming effort”

5. Working experience

- Sept. 2016-
today** **Research associate in Microprocessors and Digital Systems Lab** of the School of Electrical and Computer Engineering of National Technical University of Athens.
ICCS technical coordination in H2020 project “PRAETORIAN” (<https://praetorian-h2020.eu>)
Project technical coordinator the European in H2020 project “EXA2PRO” (<https://exa2pro.eu>)
ICCS technical coordination in the H2020 European project “SDK4ED” (<https://sdk4ed.eu>)
- Oct. 2015 –
Dec. 2015** **Visiting researcher in Chalmers University of Technology of Sweden.**
Research in real time data streaming in embedded architectures.
- Oct. 2013-
April 2014** **Visiting researcher in Chalmers University of Technology of Sweden.**
Research and development in the context of the FP7 European project “EXCESS”, in the area of development of concurrent data structures in embedded devices.
- Jan. 2011-
Oct. 2013** **Research associate in Microprocessors and Digital Systems Lab** of the School of Electrical and Computer Engineering of National Technical University of Athens.
Research and development in the context of the FP7 European project “2PARMA”, in the area of real time resource management in embedded systems.
- Jan. 2009-
Dec. 2010** **Research associate in Microprocessors and Digital Systems Lab** of the School of Electrical and Computer Engineering of National Technical University of Athens.
Research and development in the context of the FP7 European project “MNEMEE”, in the area of resource management in embedded systems at design time.
- June 2008-
May 2009** **Military service**
Network administration in the headquarters of the 12th infantry division.
- March 2007 -
Oct. 2007** **Visiting researcher in the European research center “Inter-university Micro Electronics Center”** (IMEC, Leuven, Belgium).
Research in the implementation of application in Network-on-Chip-based architectures.

6. Educational activities

4-year teaching experience:

- Undergraduate course in the Department of Social Policies, DUTH: “**Computer use in social sciences**” in 2021-2022. (ΠΔ 407)
- Undergraduate course in the Department of Agricultural Economics & Rural Development, AUA: “**Information systems**” in 2020-2021. (Απόκτηση ακαδημαϊκής εμπειρίας σε νέους επιστήμονες)
- Undergraduate course in the Department of Agricultural Economics & Rural Development, AUA: “**Introduction to Informatics**” in 2020-2021. (Απόκτηση ακαδημαϊκής εμπειρίας σε νέους επιστήμονες)
- Graduate course of NKUA: “**Embedded Systems**” in 2018-2019 and 2019-2020.

Co-supervisor of the following diploma thesis projects (supervisor: Ass. Professor D. Soudris):

- "Resource Management Techniques for Embedded Architectures executing Deep Neural Networks" (2018)
- Implementation of Intensive Convolutional Neural Networks on Embedded Devices with Limited Resources (2018)
- “Implementation of computer vision algorithms in embedded architectures”. (2016)
- “A client-server synchronization model for concurrent data structures implemented in SCC”. (2016)
- “Methodology for the optimization of applications that utilize tree data structures, in embedded systems”, (2016)

Assistant instructor in the following undergraduate courses of the School of Electrical and Computer Engineering of the National Technical University of Athens (2010 to 2016):

- Introduction to Computer Science
- Introduction to VLSI design
- Microprocessor systems
- Embedded systems design

7. Publications in Journals

[J15]	C Marantos, <u>L. Papadopoulos</u> , CP Lamprakos, K Salapas, D Soudris, “ Bringing Energy Efficiency closer to Application Developers: An Extensible Software Analysis Framework ”, IEEE Transactions on Sustainable Computing, 2022. DOI: 10.1109/TSUSC.2022.3222409. (Early Access)
[J14]	N. Vasilas, A.I. Papadopoulos, <u>L. Papadopoulos</u> , A. Salamanis, P. Kazepidis, D. Soudris, D. Kehagias, P. Seferlis, “ Approximate Computing, Skeleton Programming and Run-Time Scheduling in an Algorithm for Process Design and Controllability in Distributed and Heterogeneous Infrastructures ”, Computers & Chemical Engineering, v. 164, 2022. DOI: 10.1016/j.compchemeng.2022.107874.
[J13]	C.P. Lamprakos, C. Marantos, M. Siavvas, <u>L. Papadopoulos</u> , A.-A. Tsintzira, A. Ampatzoglou, A. Chatzigeorgiou, D. Kehagias, D. Soudris, “ Translating quality-driven code change selection to an instance of multiple-criteria decision making ”, Information and Software Technology, v. 145, 2022. DOI: 10.1016/j.infsof.2022.106851.
[J12]	C. Marantos, <u>L. Papadopoulos</u> , A.-A. Tsintzira, A. Ampatzoglou, A. Chatzigeorgiou, D. Soudris, “ Decision support for GPU acceleration by predicting energy savings and

	programming effort" , Sustainable Computing: Informatics and Systems, v. 34, 2022. DOI: 10.1016/j.suscom.2021.100631.
[J11]	<u>L. Papadopoulos</u> , D. Soudris, C. Kessler, A. Ernstsson, J. Ahlqvist, N. Vasilas, A. I. Papadopoulos, P. Seferlis, C. Prouveur, M. Haefele, S. Thibault, A. Salamanis, T. Ioakimidis, D. Kehagias, "EXA2PRO: A Framework for High Development Productivity on Heterogeneous Computing Systems" , IEEE Transactions on Parallel and Distributed Systems, v. 33, no. 4, 2021. DOI: 10.1109/TPDS.2021.3104257.
[J10]	C. Marantos, K. Salapas, <u>L. Papadopoulos</u> , D. Soudris, "A Flexible Tool for Estimating Applications Performance and Energy Consumption Through Static Analysis" , Computer Science Journal - SN Computer Science, v. 21, pp. 2-21, 2021. DOI: 10.1007/s42979-020-00405-7.
[J9]	F. Tsimpourlas, <u>L. Papadopoulos</u> , A. Bartsokas, D. Soudris, "A Design Space Exploration Framework for Convolutional Neural Networks Implemented on Edge Devices" , IEEE Transactions on CAD of Integrated Circuits and Systems, v. 37, no. 11, pp. 2212-2221, 2018. DOI: 10.1109/TCAD.2018.2857280.
[J8]	Z.-G. Tasoulas, I. Anagnostopoulos, <u>L. Papadopoulos</u> , D. Soudris, "A Message-Passing Microcoded Synchronization for Distributed Shared Memory Architectures" , IEEE Transactions on CAD of Integrated Circuits and Systems, v. 38, no. 5, pp. 975-979, 2019. DOI: 10.1109/TCAD.2018.2834423.
[J7]	G. Lentaris, K. Maragos, I. Stratakis, <u>L. Papadopoulos</u> , O. Papanikolaou, D. Soudris, M. Lourakis, X. Zabulis, D.G.-Arjona, G. Furano, "High-performance embedded computing in space: Evaluation of platforms for vision-based navigation" , Journal of Aerospace Information Systems, v. 15, issue 4, pp. 178-192, 2018. DOI: 10.2514/1.I010555.
[J6]	<u>L. Papadopoulos</u> , D. Soudris, I. Walulya, P. Tsigas, "Customization methodology for implementation of streaming aggregation in embedded systems" , Journal of Systems Architecture - Embedded Systems Design, vol. 66, pp. 48-60, 2016. DOI: 10.1016/j.sysarc.2016.04.013.
[J5]	<u>L. Papadopoulos</u> , I. Walulya, P. Tsigas, D. Soudris, "A Systematic Methodology for Optimization of Applications Utilizing Concurrent Data Structures" , IEEE Transaction on Computers, v. 65, no. 7, pp. 2019-2031, 2016. DOI: 10.1109/TC.2015.2479604.
[J4]	<u>L. Papadopoulos</u> , I. Walulya, P. Renaud-Goud, P. Tsigas, D. Soudris, B. Barry, "Performance and power consumption evaluation of concurrent queue implementations in embedded systems" , Computer Science - R&D, v. 30, no. 2, pp. 165-175, 2015. DOI: 10.1007/s00450-014-0261-0.
[J3]	C. Baloukas, J. L. Risco-Martín, D. Atienza, C. Poucet, <u>L. Papadopoulos</u> , S. Mamagkakis, D. Soudris, J. I. Hidalgo, F. Catthoor, J. Lanchares, "Optimization methodology of dynamic data structures based on genetic algorithms for multimedia embedded systems" , Journal of Systems and Software, vol. 82, no. 4, pp. 590-602, 2009. DOI: 10.1016/j.jss.2008.08.032.
[J2]	<u>L. Papadopoulos</u> , C. Baloukas, D. Soudris, "Exploration methodology of dynamic data structures in multimedia and network applications for embedded platforms" , Journal of Systems Architecture - Embedded Systems Design, vol. 54, no. 11, pp. 1030-1038, 2008. DOI: 10.1016/j.sysarc.2008.04.009.
[J1]	A. Bartzas, <u>L. Papadopoulos</u> , D. Soudris, "A system-level design methodology for application-specific networks-on-chip" , Journal of Embedded Computing, vol. 3, no. 3, pp. 167-177, 2009. DOI: 10.3233/JEC-2009-0089.

8. Publications in conferences

[P29]	M. Katsaragakis, K. Stavrakakis, D. Masouros, <u>L. Papadopoulos</u> and D. Soudris, “ Adjacent LSTM-based Page Scheduling for Hybrid DRAM/NVM Memory Systems ”, 14th Workshop on Parallel Programming and Run-Time Management Techniques for Many-core Architectures (PARMA-DITAM), 2023. (Accepted for publication).
[P28]	M. Katsaragakis, C. Baloukas, <u>L. Papadopoulos</u> , V. Kantere, F. Catthoor and D. Soudris, “ Energy Consumption Evaluation of Optane DC Persistent Memory for Indexing Data Structures ”, 29th IEEE International Conference on High Performance Computing, Data, and Analytics (HiPC), 2022. (Accepted for publication).
[P27]	A. Karteris, G. Tzanos, <u>L. Papadopoulos</u> , K. Demestichas, D. Soudris, J. P. Philibert, C. L. Gómez, “ A Methodology for enhancing Emergency Situational Awareness through Social Media ”, 17th International Conference on Availability, Reliability and Security (ARES), pp. 1-7, 2022. DOI: 10.1145/3538969.3544418.
[P26]	C. Marantos, M. Siavvas, D. Tsoukalas, C.P. Lamprakos, <u>L. Papadopoulos</u> , P. Boryszko, K. Filus, J. Domańska, A. Ampatzoglou, A. Chatzigeorgiou, E. Gelenbe, D. Kehagias, D. Soudris, “ SDK4ED: One-click platform for Energy-aware, Maintainable and Dependable Applications ”, DATE, pp. 981-986, 2022. DOI: 10.23919/DATE54114.2022.9774586.
[P25]	M. Katsaragakis, <u>L. Papadopoulos</u> , C. Baloukas, D. Soudris, “ Memory Management Methodology for Application Data Structure Refinement and Placement on Heterogeneous DRAM/NVM Systems ”, 2022 Design, Automation & Test in Europe Conference & Exhibition (DATE), pp. 748-753, 2022. DOI: 10.23919/DATE54114.2022.9774666
[P24]	C. P. Lamprakos, <u>L. Papadopoulos</u> , F. Catthoor, D. Soudris, “ The Impact of Dynamic Storage Allocation on CPython Execution Time, Memory Footprint and Energy Consumption: An Empirical Study ”, SAMOS, pp. 219-234, 2022. DOI: 10.1007/978-3-031-15074-6_14. DOI: 10.5281/zenodo.4659608.
[P23]	C. P. Lamprakos, C. Marantos, <u>L. Papadopoulos</u> , D. Soudris, “ The Known Unknowns: Discovering Trade-Offs Between Heterogeneous Code Changes ”, International Conference on Embedded Computer Systems (SAMOS), pp. 342-353, Springer, 2022. DOI: 10.1007/978-3-031-04580-6_23. (Invited paper)
[P22]	G. Tzanos, V. Soni, C. Prouveur, M. Haefele, S. Zouzoula, <u>L. Papadopoulos</u> , S. Thibault, N. Vandenberg, D. Pleiter, D. Soudris, “ Applying StarPU runtime system to scientific applications: Experiences and lessons learned ”, 2nd International Workshop on Parallel Optimization using/for Multi-and Many-core High Performance Computing (POMCO), 2020.
[P21]	M. Katsaragakis, <u>L. Papadopoulos</u> , M. Konijnenburg, F. Catthoor, D. Soudris: “ Memory Footprint Optimization Techniques for Machine Learning Applications in Embedded Systems ”, pp. 1-4, ISCAS, 2020. DOI: 10.1109/ISCAS45731.2020.9181038.
[P20]	C. Marantos, A.A. Tsintzira, <u>L. Papadopoulos</u> , A. Ampatzoglou, A. Chatzigeorgiou, D. Soudris: “ Technical Debt Management and Energy Consumption Evaluation in Implantable Medical Devices: The SDK4ED Approach ”, SAMOS, pp. 348-358, 2020. DOI: 10.1007/978-3-030-60939-9_25.
[P19]	S. Panagiotou, A. Ernstsson, J. Ahlqvist, <u>L. Papadopoulos</u> , C. W. Kessler, D. Soudris: “ Portable exploitation of parallel and heterogeneous HPC architectures in neural simulation using SkePU ”, SCOPES, pp. 74-77, 2020. DOI: 10.1145/3378678.3391889.

[P18]	M. Siavvas, C. Marantos, <u>L. Papadopoulos</u> , D. Kehagias, D. Soudris, D. Tzovaras, “ On the relationship between software security and energy consumption ”, 15th China-Europe International Symposium on software engineering education, 2019.
[P17]	D. Soudris, <u>L. Papadopoulos</u> , C. W. Kessler, D. D. Kehagias, A. Papadopoulos, P. Seferlis, A. Chatzigeorgiou, A. Ampatzoglou, S. Thibault, R. Namyst, D. Pleiter, G. Gaydadjiev, T. Becker, M. Haefele, “ EXA2PRO Programming Environment: Architecture and Applications ”, SAMOS, pp. 202-209, 2018. DOI: 10.1145/3229631.3239369.
[P16]	A. Xygkis, <u>L. Papadopoulos</u> , D. Moloney, D. Soudris, S. Yous, “ Efficient winograd-based convolution kernel implementation on edge devices ”, 55th ACM/ESDA/IEEE Design Automation Conference (DAC), pp. 1-6, 2018. DOI: 10.1145/3195970.3196041
[P15]	<u>L. Papadopoulos</u> , C. Marantos, G. Digkas, A. Ampatzoglou, A. Chatzigeorgiou, D. Soudris, “ Interrelations between Software Quality Metrics, Performance and Energy Consumption in Embedded Applications ”, SCOPES, pp. 62-65, 2018. DOI: 10.1145/3207719.3207736.
[P14]	T. Papastergiou, <u>L. Papadopoulos</u> , D. Soudris, “ Platform-aware dynamic data type refinement methodology for radix tree Data Structures ”, SAMOS 2015, pp. 78-85, 2015. DOI: 10.1109/SAMOS.2015.7363662.
[P13]	<u>L. Papadopoulos</u> , D. Soudris, “ An Energy Efficient Message Passing Synchronization Algorithm for Concurrent Data Structures in Embedded Systems ”, SCOPES 2015, pp. 113-116, 2015. DOI: 10.1145/2764967.2771931.
[P12]	<u>L. Papadopoulos</u> , I. Walulya, P. Tsigas, D. Soudris, B. Barry, “ Evaluation of message passing synchronization algorithms in embedded systems ”, ICSAMOS 2014, pp. 282-289, 2014. DOI: 10.1109/SAMOS.2014.6893222.
[P11]	<u>L. Papadopoulos</u> , A. Bartzas, D. Soudris, “ Run-Time Dynamic Data Type Transformations ”, ARCS Workshops 2012, pp. 351-362, 2012.
[P10]	A. Mallik, S. Mamagkakis, C. Baloukas, <u>L. Papadopoulos</u> , D. Soudris, S. Stuijk, O. Jovanovic, F. Schmoll, D. Cordes, R. Pyka, P. Marwedel, F.s Capman, S. Collet, N. Mitas, D. Kritharidis, “ MNEMEE-An automated toolflow for parallelization and memory management in MPSoC platforms ”, Proceedings of ACM Design Automation Conference (DAC), 2011.
[P9]	C. Baloukas, <u>L. Papadopoulos</u> , R. Pyka, D. Soudris, P. Marwedel, “ An automatic framework for dynamic data structures optimization in C ”, VLSI-SoC 2010, pp. 155-160, 2010. DOI: 10.1109/VLSISOC.2010.5642605.
[P8]	C. Baloukas, <u>L. Papadopoulos</u> , D. Soudris, S. Stuijk, O. Jovanovic, F. Schmoll, P. Marwedel, D. Cordes, R. Pyka, A. Mallik, S. Mamagkakis, F. Capman, S. Collet, N. Mitas, D. Kritharidis, “ Mapping Embedded Applications on MPSoCs: The MNEMEE Approach ”, ISVLSI 2010, pp. 512-517, 2010. DOI: 10.1109/ISVLSI.2010.96.
[P7]	N. Zompakis, <u>L. Papadopoulos</u> , G. Ch. Sirakoulis, D. Soudris, “ Implementing cellular automata modeled applications on network-on-chip platforms ”, VLSI-SoC 2007, pp. 288-291, 2007. DOI: 10.1109/VLSISOC.2007.4402514.
[P6]	C. Baloukas, <u>L. Papadopoulos</u> , S. Mamagkakis, D. Soudris, “ Component Based Library Implementation of Abstract Data Types for Resource Management Customization of Embedded Systems ”, ESTImedia 2007, pp. 99-104, 2007. DOI: 10.1109/ESTMED.2007.4375812.
[P5]	<u>L. Papadopoulos</u> , C. Baloukas, D. Soudris, K. Potamianos, N. S. Voros: “ Data Structure Exploration of Dynamic Applications ”, PACT, 2007. DOI: 10.1109/PACT.2007.4336249.
[P4]	<u>L. Papadopoulos</u> , D. Soudris, “ System-Level Application-Specific NoC Design for Network and Multimedia Applications ”, PATMOS 2007, pp. 1-9, 2007. DOI: 10.5555/2391795.2391797.

[P3]	<u>L. Papadopoulos</u> , C. Baloukas, N. Zompakis, D. Soudris, " Systematic Data Structure Exploration of Multimedia and Network Applications realized Embedded Systems ", ICSAMOS 2007, pp. 58-65, 2007. DOI: 10.1109/ICSAMOS.2007.4285734.
[P2]	D. Atienza, C. Baloukas, <u>L. Papadopoulos</u> , C. Poucet, S. Mamagkakis, J. I. Hidalgo, F. Catthoor, D. Soudris, J. Lanchares, " Optimization of dynamic data structures in multimedia embedded systems using evolutionary computation ", SCOPES 2007, pp. 31-40, 2007. DOI: 10.1145/1269843.1269849.
[P1]	<u>L. Papadopoulos</u> , S. Mamagkakis, F. Catthoor, D. Soudris, " Application - specific NoC platform design based on System Level Optimization ", ISVLSI 2007, pp. 311-316, 2007. DOI: 10.1109/ISVLSI.2007.26.