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Halima Bouzidi

Curriculum Vitae

Research Interests

Theme: Machine Learning and Embedded System Security
Energy-Efficient AI on Edge Computing Systems
Data-Driven Optimization and Surrogate Modeling
Automated Design of Machine Learning
Multimodal Learning and Data Fusion
Auxiliary: Quantum and Neuromorphic Computing

Education

01/2021_12/2023 **Ph.D**, *Computer Engineering*, Polytechnic University of Hauts-de-France (UPHF), France.
09/2015_09/2020 **B.Sc/M.Sc**, *Computer Engineering*, Higher National School of Computer Science (ESI), Algeria.
09/2012_07/2015 **High School Diploma, Science Major**, *Senhadri Abdelhafid High-school*, Algeria, GPA: 4.0/4.0.

Working Experiences

08/2024_Now **Postdoctoral Scholar**, *University of California, Irvine*, US.
02/2024_07/2024 **Research Fellow in Trustworthy AI**, *Queen's University of Belfast*, UK.
11/2021_03/2023 **Graduate Teaching Assistant**, *INSA Hauts-de-France, UPHF*, France.
01/2021_12/2023 **Research Assistant**, *LAMIH, Polytechnic University of Hauts-de-France (UPHF)*, France.
01/2020_06/2020 **M.Sc. Research Intern**, *LAMIH, Polytechnic University of Hauts-de-France (UPHF)*, France.
06/2018_09/2018 **Software Developer Intern**, *SONELGAZ, Department of Information Systems*, Algeria.

Publications

Refereed Journal Articles

TECS 2023 Mohanad Odema*, **Halima Bouzidi***, Hamza Ouarnoughi, Smail Niar, and Mohammad Abdullah Al Faruque. 2023. MaGNAS: A Mapping-Aware Graph Neural Architecture Search Framework for Heterogeneous MPSoC Deployment. ACM Transactions on Embedded Computing Systems (TECS), 2023. https://doi.org/10.1145/3609386 (SCI IF=2.58)

TECS 2022 **Halima Bouzidi**, Hamza Ouarnoughi, Smail Niar, and Abdessamad Ait El Cadi. 2022. Performances Modeling of Computer Vision-based CNN on Edge GPUs. ACM Transactions on Embedded Computing Systems (TECS), 2022. https://doi.org/10.1145/3527169 (SCI IF=2.58). This work is also under commercialization by the Institute for Technological Research (IRT) SystemX based in France.

Book Chapters

OLA 2022 **Halima Bouzidi**, Hamza Ouarnoughi, El-Ghazali Talbi, Abdessamad Ait El Cadi, and Smail Niar. Evolutionary-Based Co-optimization of DNN and Hardware Configurations on Edge GPU. In: Dorronsoro, B., Pavone, M., Nakib, A., Talbi, EG. Optimization and Learning. (OLA) 2022. Communications in Computer and Information Science, vol 1684. Springer Nature.

Conference Proceedings

ERTS 2024 Eric Jenn, Floris Thiant, Theo Allouche, **Halima Bouzidi**, Ramon Conejo-Laguna, Omar Hlimi, Cyril Louis-Stanislas, Christophe Marabotto, Smail Niar, Serge Tembo-Mouafo and Philippe Thierion. An Evaluation Bench for the Exploration of Machine Learning Deployment Solutions on Embedded Platforms. in Proceedings of the European Congress on Embedded Real Time Systems (ERTS). 2024

ACML 2023 Mohamed Imededdine Ghebriout, **Halima Bouzidi**[§], Smail Niar, Hamza Ouarnoughi. Harmonic-NAS: Hardware-Aware Multimodal Neural Architecture Search on Resource-constrained Devices. in "Proceedings of the Asian Conference on Machine Learning (ACML)," PMLR 2023.

CASES 2023 Mohanad Odema*, **Halima Bouzidi***, Hamza Ouarnoughi, Smail Niar, Mohammad Al Faruque. MaGNAS: A Mapping-Aware Graph Neural Architecture Search Framework for Heterogeneous MPSoC Deployment. in "Proceedings of the International Conference on Compilers, Architectures, and Synthesis for Embedded Systems (CASES)", ESWEEK 2023, **Journal track**

DAC 2023 **Halima Bouzidi**, Mohanad Odema, Hamza Ouarnoughi, Smail Niar, Mohammad Al Faruque. 2023., Map-and-Conquer: Energy-Efficient Mapping of Dynamic Neural Nets onto Heterogeneous MPSoCs. in "Proceedings of the 60th ACM/IEEE Design Automation Conference (DAC)", 2023

DATE 2023 **Halima Bouzidi**, Mohanad Odema, Hamza Ouarnoughi, Mohammad Al Faruque, Smail Niar. 2023., HADAS: Hardware-Aware Dynamic Neural Architecture Search for Edge Performance Scaling. in "Proceedings of the 26th IEEE/ACM Design, Automation & Test in Europe Conference & Exhibition (DATE)", 2023, **Best Paper Award Candidate**

DSD 2022 **Halima Bouzidi**, Hamza Ouarnoughi, Smail Niar, El-Ghazali Talbi, and Abdessamad Ait El Cadi. Co-Optimization of DNN and Hardware Configurations on Edge GPUs. In "Proceedings of the 25th IEEE Euromicro Conference on Digital System Design (DSD)", 2022

META 2021 **Halima Bouzidi**, Hamza Ouarnoughi, El-Ghazali Talbi, Abdessamad Ait El Cadi, and Smail Niar. 2021., Evolutionary-based Optimization of Hardware Configurations for DNN on Edge GPUs. in "Proceedings of the 8th International Conference on Metaheuristics and Nature Inspired Computing, (META)" 2021

CF 2021 **Halima Bouzidi**, Hamza Ouarnoughi, Smail Niar, and Abdessamad Ait El Cadi. Performance Prediction for Convolutional Neural Networks on Edge GPUs. in "Proceedings of the 18th ACM International Conference on Computing Frontiers (CF), 2021".

Pre-prints & Under Submission

Ildi Alla, **Halima Bouzidi**, Marco Levorato, Valeria Loscri. Real-Time Small UAV Detection: Fusing Audio and Visual Sensors for Enhanced Security

Mahmoud Ghorbel, **Halima Bouzidi**, Ioan Marius Bilasco, Ihsen Alouani. Model for Peanuts: Hijacking ML models without Training Access is Possible.

Halima Bouzidi, Hamza Ouarnoughi, Smail Niar, El-Ghazali Talbi. SONATA: Self-Adaptive Evolution for Multi-objective Hardware-aware Neural Architecture Search.

Hadjer Benmeziane*, **Halima Bouzidi***, Hamza Ouarnoughi, Ozcan Ozturk, Smail Niar. Treasure What You Have: Exploiting Similarity in Deep Neural Networks for Efficient Video Processing.

Awards, Honors, and Certificates

Jan 2024 HiPEAC Paper Award 2023 for our Paper "Map-and-Conquer: Energy-Efficient Mapping of Dynamic Neural Nets onto Heterogeneous MPSoCs" Published at DAC 2023 (Certificate)

Nov 2023 Google Course on "Play It Safe: Manage Security Risks", 11 hours, Grade: 92.57%, (Certificate)

Nov 2023 Google Course on "Foundations of Cybersecurity", 21 hours, Grade: 87.59%, (Certificate)

Sep 2023 Selected for the Ph.D. Forum Lightning talk in the International Conference on Compilers, Architectures, and Synthesis for Embedded Systems (CASES), ESWEEK, 2023. (Poster)

Sep 2023 ACM Student Travel Grant for the International Conference on Compilers, Architectures, and Synthesis for Embedded Systems (CASES), ESWEEK, 2023.

Apr 2023 Best Paper Award Candidate Nomination in DATE'2023 (DATE 2023 Awards)

Apr 2022 Participation in the NCC Portugal Nways to GPU Programming Bootcamp (Certificate)

Nov 2021 Participation in the AutoML Fall School (Certificate)

Feb 2019 Cisco Certified Network Associate Routing and Switching (CCNA)(Certificate)

Jul 2017 Ranked 11th among 450 Students in the National Competition Exam for the M.Sc Program Entrance at the Higher National School of Computer Science of Algiers (ESI), Algeria.

Jun 2015 Ranked 1st in my Region in the National High School Graduation Exam with GPA: 4.0/4.0

Seminars and Invited Talks

April 2024 Invited Speaker, GHOST Day: Applied Machine Learning Conference, Poznań University of Technology, Poland. "Chasing the Efficiency in the Era of LLMs" (Speakers)

July 2023 Seminar on "Bridging the Gap Between Neural Networks and Edge Devices" at the Self-Organizing Future Ubiquitous Networks (FUN) Group, INRIA Nord-Europe Research Center, Lille, France.

May 2022 Invited Talk on "Evolutionary-Based Co-Optimization of DNN and Hardware Configurations on Edge GPU" in the AutoDeepML Workshop: Design and Optimization of Deep Neural Networks, May 10-11, 2022, CRISTAL - CNRS, INRIA Lille, France.

Apr 2022 Group Seminar on "Optimization of DNN and Hardware Configurations on Edge GPUs" LAMIH, Polytechnic University of Hauts-de-France (UPHF), Valenciennes, France.

Academic Supervision and Mentorship

2022 – 2023 Mohamed Imededdine GHEBRIOUT (Undergrad), The Higher National School of Computer Science (ESI), Algeria: Master Internship on HW-aware Multimodal Neural Architecture Search.

2021 – 2022 Farouk ABDALLAH (Undergrad), The Higher National School of Computer Science (ESI), Algeria: Master Internship on Implementing Efficient Lane Detection Models on Edge GPUs.

Teaching Experiences (Total: 97H)

Fall 2023 Introduction to Computer Architectures and Operating Systems (SHpI 2A), INSA Hauts-de-France

Fall 2022 Introduction to Computer Architectures and Operating Systems (SHpI 2A), INSA Hauts-de-France

Fall 2022 Introduction to Algorithm and Programming (Prepa INSA 1A), INSA Hauts-de-France

Fall 2021 Introduction to Computer Architectures and Operating Systems (SHpI 2A), INSA Hauts-de-France

Professional Services

Nonprofit Organizations

2023 – now Member in Women in CyberSecurity (WiCyS) Organization.

2022 – now Member in the Electronics Community of the Algerian Women in Science (ALWIS) Group.

2018 – 2020 Co-founder and Programming Workshops Organizer in the Code&Share Student Club, Higher National School of Computer Science of Algiers, Algeria.

Academic Memberships

2022 – now IEEE Young Professional (Certificate), IEEE CEDA, IEEE CASS, IEEE Women in Engineering

2022 – 2023 IEEE Graduate Student (Certificate)

Program Committee

Euromicro Conference Series on Digital System Design (DSD 2023)

Scalable Deep Learning over Parallel And Distributed Infrastructures workshop (ScaDL 2023)

Reviewer of Journals

ACM Transactions on Computer Systems (TOCS)

ACM Transactions on Embedded Computing Systems (TECS)

IEEE Transactions on Computer-Aided Design of Integrated Circuits and Systems (TCAD)

Reviewer of Conferences/Workshops

Neural Information Processing Systems (Neurips 2024)

AI for Science ICML Workshop (ICML-AI4Science 2024)

The Asian Conference on Machine Learning (ACML 2024)

IEEE International Symposium on Circuits and Systems (ISCAS 2024)

Northern Lights Deep Learning Conference (NLDL 2024)

Generative AI for Biology NeurIPS Workshop (GenBio@NeurIPS 2023)

AI for Science NeurIPS Workshop (NeurIPS-AI4Science 2023)

The International Symposium on Performance Analysis of Systems and Software (ISPASS 2023)

IEEE International Conference on Edge Computing (IEEE EDGE 2023)

ACM/IEEE Design, Automation, and Test in Europe (DATE 2022, 2023, 2024)

ACM/SIGAPP Symposium On Applied Computing (SAC 2022)

Technical Skills

Data science:	Data Modeling, Visualization, and Evaluation (Python and R)
DL Frameworks:	PyTorch, PyTorch Geometric, TensorRT, Keras, TensorFlow
Optimization:	Evolutionary Algorithms, Bayesian Optimization, Reinforcement Learning
Embedded-sys	NVIDIA Edge GPUs, Raspberry-Pi, Google Coral TPU, Xilinx FPGA
Programming	Python, C/C++, Java, JavaScript, OpenMP, CUDA, OpenACC
Op-Systems	Linux (RHEL, UBUNTU, DEBIAN), Vmware, VirtualBox, Docker
Networking:	Routing & Switching, GNS3, PacketTracer, Jperf, Weirshark
Typography:	LaTeX, LibreOffice/OpenOffice, Microsoft Office

Selected Open-source Projects during Undergraduate Studies

2018-2019 **SIQLETON**: Dynamic dance game developed for the Nexys 3 platform using VHDL and Xilinx ISE. Players respond to arrow sequences to score points and maintain their game life. SIQLETON combines rhythm, timing, and strategic play in an engaging arcade-style format. (Code)

2018-2019 **Saydaliyati**: Mobile application that allows locating the nearest open pharmacies. It enables users to send a prescription photo to a pharmacy, and receive alerts on the processing status of the prescription, as well as making online payments. (Code)

2017-2018 **Trabajos**: Web platform developped with JavaScript for solving schudeling Flowshop problem with: (i) Exact Methods: Branch & Bound and Dynamic Programming. (ii) Heuristics: CDS, Johnson to N machines, NEH and Palmer. (iii) Metaheuristics: Genetic Algorithm, Simulated Annealing and Tabou Search. (Code)

Languages

English: Full professional proficiency

French: Native or bilingual proficiency

Arabic: Native or bilingual proficiency

Interests

Part-time Freelance (Machine Learning Developer at Freelancer)

Sport, Photography, Chess

Volunteering (Organization of Computer Programming Workshops for Children)

References

Mohammad Abdullah Al Faruque
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University of California, Irvine (UCI), United States
E-mail: alfaruqu@uci.edu

Ihsen Alouani
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CSIT, Queen's University Belfast, United Kingdom
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Smail Niar
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Professor and Head of CRISTAL Laboratory
Department of Computer Science, University of Lille
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