



# Alessio Burrello

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## Short Bio

Alessio Burrello is currently an Assistant Professor at Politecnico di Torino, Italy. He holds a B.Sc. (23 July 2016) and a M.Sc. (29 October 2018) degree in Electronic Engineering from Politecnico di Torino (both with a score of 110/110 cum laude), and a Ph.D. degree in Electronic Engineering from the University of Bologna (2023). In past years, he has been a visiting researcher at the Politecnico di Torino under the supervision of Prof. Enrico Macii (2019-2022), at the IIS department in ETH Zurich under the supervision of Prof. Luca Benini (2018), and at the MICAS department at KU Leuven under the supervision of Prof. Marian Verhelst (2022). His research interests include parallel programming models for embedded systems, machine, and deep learning, hardware-oriented deep learning, and code optimization for multi-core systems with particular emphasis on energy efficiency. Further, he uses his knowledge to develop cutting-edge applications and improve the state-of-the-art in several fields. In these fields, he has co-authored more than 70 scientific publications, including 42 journal papers. He has also served as a reviewer for more than 20 IEEE and ACM-sponsored international conferences and journals. Link to the full resume: <https://drive.google.com/file/d/1K0p0EkgKJN36GhDf9LnxnkDeUTuGW1Gu/view?usp=sharing>

**Affiliation:** Politecnico di Torino

**Keywords:** Neural Architecture Search, Embedded Systems, AI Deployment, PPG, sEMG, EEG, iEEG, Biosignal Processing, Embedded AI, Deep Learning.

## Work Experience

- October 2024 – **Assistant Professor**, POLITECNICO DI TORINO, Turin, Italy.  
Present Energy-Efficient Deployment for IoT Systems, Tiny Machine Learning, Deep Learning Applications, AI Compilers.
- November 2022 – **Research Assistant**, POLITECNICO DI TORINO, Turin, Italy.  
September 2024 Energy-Efficient Deployment for IoT Systems, Tiny Machine Learning, Deep Learning Applications, AI Compilers.
- November 2022 – **Research Collaborator**, UNIVERSITY OF BOLOGNA, Bologna, Italy.  
Present Contract of continuous collaboration. I worked as an external consultant for Prof. Luca Benini's group, being responsible for projects related to Tiny Machine Learning and AI Compilers.
- April – September 2022 **Visiting Researcher**, KU LEUVEN, Leuven, Belgium.  
Integration of Automatic Deployment and Design Exploration for Heterogenous Systems-on-Chips.
- March–August 2018 **Visiting Researcher (M. Sc. Thesis)**, ETH ZURICH, Zurich, Switzerland.  
Epileptic Seizure Detection through ultra-low power bio-inspired machine learning algorithms.

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## Awards

- 2024 Finalist for the “Most Promising Researcher in Robotics and Artificial Intelligence 2024”, sponsored by Fondazione Mondo Digitale ETS in collaboration with Italian Tech and Gruppo GEDI.
- 2024 Best paper award in the 2024 Design, Automation and Test in Europe (DATE) Conference. Paper title: “HW-SW Optimization of DNNs for Privacy-preserving People Counting on Low-resolution Infrared Arrays”
- 2018 Best paper Award in the ISVLSI 2023 Conference. Paper title: “A 3 TOPS/W RISC-V Parallel Cluster for Inference of Fine-Grain Mixed-Precision Quantized Neural Networks”
- 2023 Best Poster Award at the PhD Forum at the 2023 Design, Automation and Test in Europe (DATE) Conference for the PhD thesis. Thesis title: "Optimizing AI: from Network Topology Design to MCU Deployment".
- 2023 Featured Paper of the Month in the March 2023 issue of the IEEE Transactions on Computers (TC). Paper title: “Lightweight Neural Architecture Search for Temporal Convolutional Networks at the Edge”
- 2022 Best paper candidate in the 2022 Design, Automation and Test in Europe (DATE) Conference. Paper title: “Bioformers: Embedding Transformers for Ultra-low Power sEMG-based Gesture Recognition”
- 2021 Selected paper at the IEEE International Symposium on Circuits and Systems (ISCAS) 2021. Paper title: “Robust and energy-efficient PPG-based Heart Rate Monitoring”
- 2021 F4LabMed - De Barjac prize for the publication “Immune profiling of plasma-derived EVs identifies Parkinson disease”, published in Neurology Neuroimmunology & Neuroinflammation.
- 2019 Best paper candidate in the 2019 Design, Automation and Test in Europe (DATE) Conference. Paper title: “Laelaps: An Energy-Efficient Seizure Detection Algorithm from Long-term Human iEEG Recordings without False Alarms,”
- 2018 Best paper Award in the 2018 BioMedical Circuits And Systems (BioCAS) Conference. Paper title: “One-shot learning for iEEG seizure detection using end-to-end binary operations: Local binary patterns with hyperdimensional computing,”

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## Editorial Roles

- 2022–Present Review Editor for Neuromorphic Engineering, Frontiers in Neuroscience

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## Conference Management

- 2024 Organizer of the workshop co-located with DATE24, Valencia: "Enabling rapid and sustainable RISC-V based research using open source HW and SW". Link: <https://www.date-conference.com/workshop/w07>

2024 Organizer of the workshop co-located with CF24, Ischia: "Workshop on Open-Source Hardware". Link: <https://www.computingfrontiers.org/2024/workshops.html>

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## Member of Technical Program Committees

- 2021–2024 ACM/IEEE International Symposium on Low Power Electronics and Design (ISLPED)
- 2023 17th IEEE International Conference Application of Information and Communication Technologies (AICT)
- 2023 IEEE International Conference on VLSI Design
- 2024 2024 tinyML Research Symposium
- 2024 SSH-SoC: Safety and Security in Heterogeneous Open System-on-Chip Platforms workshop co-located with IEEE Design Automation Conference '24
- 2024 IFIP/IEEE International Conference on Very Large Scale Integration -SoC, Ph.D. Forum 2024

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## PI of Funded Projects

- 2025–Present NEURAL: On-device bio-signal powered user-assistant for daily life, Internal POLITO Individual Funded project (60,000 €), ranked 1/65.

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## Participation in Funded Projects

- 2023–Present ISOLDE (High Performance, Safe, Secure, Open-Source Leveraged RISC-V Domain-Specific Ecosystems), Horizon Europe, KDT-JU.
- 2023–Present HICONNECTIONS (Heterogeneous Integration for Connectivity and Sustainability), Horizon Europe, KDT-JU.
- 2023–Present TRISTAN (Together for RISC-V Technology and Applications), Horizon Europe, KDT-JU.
- 2021–Present BonsAPPs (AI-as-a-Service for the Deep Edge), Horizon Europe 2020.

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## Publications

H-Index (SCOPUS): 17

Number of Publications (SCOPUS): 74

Total Number of citations (SCOPUS): 988

Total Impact Factor: 232.43

Total SJR: 70.36

Alessio Burrello is the author of 42 papers on international peer-reviewed journals, 30 international peer-reviewed conferences, and 1 book chapter.

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