

Vincenzo Barbuto

PhD Student

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Education

Visiting Student Researcher , <i>University of California, Berkeley</i> 🔗 Leverage the Lingua Franca coordination language to enhance the determinism of Edge Intelligence-based IoT systems.	03/2024 – present Berkeley, USA
PhD in Information and Communication Technologies , <i>University of Calabria</i> 🔗 Intelligence at the IoT Edge: models and techniques for enabling smartness in IoT systems.	11/2022 – present Cosenza, Italy
M.S. Computer Engineering for the Internet of Things , <i>University of Calabria</i> 🔗 Final Score 110/110 cum laude	09/2020 – 09/2022 Cosenza, Italy
M.S. in Data Science and Network Intelligence , <i>Télécom SudParis, Institut Polytechnique de Paris</i> 🔗 GPA 18,34/20	09/2021 – 07/2022 Évry, France
B.S. in Computer Engineering , <i>University of Calabria</i> 🔗 Final Score 105/110	09/2017 – 09/2020 Cosenza, Italy

Professional Experience

Teaching Assistant , <i>University of Calabria</i> 🔗 Assisted first-year students in learning the C programming language	03/2023 – 09/2023 Cosenza, Italy
Research Trainee - IoT and Digital Twins , <i>DICE Lab</i> 🔗 <ul style="list-style-type: none">Implemented a Traffic Monitoring System based on Digital Twins and Edge AI99,87% of bandwidth saved with respect to a Cloud-centric approachinferences performed from 2 to 10 times faster in the edge device than in a remote server	02/2022 – 06/2022 Évry, France
Software Engineer , <i>Caliò Informatica S.R.L.</i> 🔗 <ul style="list-style-type: none">Reduced the http request throughput of a platform that manages over five million invoices per year by using the browser cacheReduced the processing time of a huge number of downloaded invoices by exploiting threads and parallelism in C#Exploited SQL bulk functions to reduce both the insertion and update time of warehouse's items in a Content Management System (CMS)	12/2020 – 09/2021 Cosenza, Italy

Projects

Lingua Franca , 🔗 <i>A polyglot language for deterministic concurrency and timed behavior</i> <ul style="list-style-type: none">Implemented a Machine Learning library for Edge AI in Lingua Franca using the TensorFlow Lite framework: edgeai-python 🔗Enhanced the VS Code Extension 🔗 with a Package Explorer for managing local and remote packages, enabling a low-code interface comparable to state-of-the-art IoT tools.	03/2024 – present
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- Diabetes Management System,** 2022
IoT system able to manage autonomously Type 1 Diabetes Mellitus patients
- Designed an improved IoT system using an **hybrid-fog network architecture** that exploits **in-network computing**
 - **Reduced computing time by 70% moving some computation from the cloud to edge and fog devices**
- Health Environment,** 2021
IoT system able to monitor remotely the environment of a home for elderly
- **Acquired experience with MQTT protocol using OMA LwM2M semantic** for the topic definition
 - Acquired experience with time series databases such as **InfluxDB**
 - Processed, analyzed and displayed huge amount of data acquiring experience with tools such as **NodeRed, Grafana and OpenHAB**

Publications

- A Generative AI-Driven Architecture for Intelligent Transportation Systems,** 11/2024
IEEE [↗](#)
Mangione, F., Barbuto, V., Savaglio, C., Fortino, G. 2024 *IEEE 10th World Forum on Internet of Things (WF-IoT)*
- Generative Digital Twins: A Novel Approach in the IoT Edge-Cloud Continuum,** 08/2024
IEEE [↗](#)
Savaglio, C.; Barbuto, V.; Mangione, F.; Fortino, G. in *IEEE Internet of Things Magazine*
- Towards an Edge Intelligence-based Traffic Monitoring System,** IEEE [↗](#) 10/2023
Barbuto, V.; Savaglio, C.; Minerva, R.; Crespi, N.; Fortino, G. *IEEE International Conference on Systems, Man, and Cybernetics (SMC), IEEE.*
- Opportunistic Digital Twin: an Edge Intelligence enabler for Smart City,** ACM [↗](#) 08/2023
Savaglio, C.; Barbuto, V.; Awan, F. M.; Minerva, R.; Crespi, N.; Fortino, G. *ACM Transactions on Sensor Networks*
- Disclosing Edge Intelligence: A Systematic Meta-Survey,** MDPI [↗](#) 03/2023
Barbuto, V.; Savaglio, C.; Chen, M.; Fortino, G. *Big Data and Cognitive Computing*

Awards

- Most deserving student,** in *Computer Engineering for the IoT* 2022
Most dedicated and highest-achieving student among the Internet of Things (IoT) students within the Department of Computer, Modeling, Electronic, and System Engineering, University of Calabria for the academic year 2020-21 and 2021-22
- DIMES Excellence Program,** in *Computer Engineering* 2021
Outstanding undergraduate student in the Department of Computer, Modeling, Electronic, and System Engineering, University of Calabria for the academic year 2020-21

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