Andrea Carollo

R&D Software Engineer

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Professional Summary

Computer scientist currently working as a Software Engineer in R&D at Zerodivision Systems, specializing in innovative projects ranging from quantum cryptography firmware to Artificial Intelligence-based solutions. Previous experience includes a Data Science internship at Dedalus, focusing on data management and analytics in healthcare. Author of scientific publications presented at international conferences and published by Springer. Co-inventor of a pending software patent. Experienced improvisational theater actor/teacher and vice president of a cultural association, demonstrating strong teamwork, collaboration, and interpersonal communication skills.

Experience

Zerodivision Systems — Dec 2023 – Present

R&D Software Engineer — *Pisa, Italy*

- Managed an independent project for IQrypto (Belgian start-up) under a European funding initiative. Developed a Linux kernel driver enabling communication between a quantum chip mounted on a Zynq7000-series board and a Raspberry Pi, making quantum-generated random numbers accessible to connected devices.
- Designed and developed a Jupyter Notebook extension enabling HPC workflows directly in notebooks; presented the project at international conferences and co-authored 3 peer-reviewed papers. on distributed training of a CNN, reduced training time from 30 minutes to 8 minutes on 4 GPUs (3.75× speedup) in a federated-learning scenario
- Refactored SNAI's computer vision stack and optimized the developed Android app, boosting camera performance by 400%, accelerating focus, improving image quality, enabling device-adaptive tuning.
- Designed and developed a commercial chatbot from scratch using Langflow, integrated with WhatsApp to assist customers with purchases and provide product recommendations.
- Designed and developed from scratch an Android application in just 14 days using Ionic/React, enabling the management and monitoring of electric vehicle charging stations.
- Contributed actively to the design and development of software architecture, solving complex technical issues, and implementing robust, scalable solutions.

Dedalus Group — Mar 2023 – June 2023

Data Science Intern — *Pisa, Italy*

- Developed machine learning models in Python for diagnosis and rehabilitation of cardiovascular patients, achieving average accuracy, precision, and recall scores of 95%, 94%, and 95%, respectively.
- Collected, cleaned, and analyzed healthcare datasets to accurately identify patients suffering from cardiovascular diseases.
- Applied Explainable Artificial Intelligence (XAI) methods to interpret model predictions clearly
- Presented model insights and updates effectively to both technical and non-technical stakeholders

Publications

Strategies for Flow-Based Deployment and Orchestration in Cloud-Edge Interactive Computing
Presented at AINA-2025, Barcelona, Spain. Published in Advanced Information Networking and Applications, Springer, 2025.

A Methodology and Tool for Automatic Workload Distribution. A case study on federated learning
To be presented at 3PGCIC 2025, United Arab Emirates. To appear in Lecture Notes in Data Engineering and Communication Technologies, Springer.

Automatic code decomposition, parallelization, and distribution on heterogeneous systems. A case study on training a neural network for image classification
Presented at ITADATA 2025, Torino, Italy, September 2025.

Education

Università di Pisa

Bachelor of Science in Computer Science — *July 2023 Pisa, Italy*

Technical Skills

Programming Languages: Python, Java, C, JavaScript, SQL, HTML/CSS, ASM ARM, Bash, Matlab, OCaml.
Data Science & Machine Learning: Scikit-learn, Pandas, Matplotlib, Keras, NumPy, XAI methods, OpenCV.
Technologies & Tools: Docker, AWS, Redis, HPC, Petalinux, Vivado, Git, UML, Agile, UNIX, Android Studio.
Languages: Italian (Native), English (Professional - C1).