

Luca Capezzuto

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PhD and MSc (Hons) in Computer Science with 8 years of engineering experience across Big Tech, government R&D, and academia. Expertise in Large-Scale Multi-Agent/Robot Systems. Continuous learner with a passion for computational sustainability and effective altruism.

Experience

Full Stack Software Engineer

Amazon

Sep 2022 – Present

London, UK

- I help scale transportation networks in US, Canada, Europe, and India. Main technologies used: Machine Learning, Python, C++, Java, Scala, React, SQL, AWS (Lambda, Step Functions, SageMaker, Kinesis, EKS).
- Official commendation at the 2023 Q1 All-Hands for my operational excellence (out of 42 people), which led to 50x faster data ingestion services, and minimized on-call burden.
- Reduced failure rate from 13% to 0% for a flagship internal product, for which the [Prime Day 2023](#) week was the most successful in 7 years in terms of reliability and performance. Completed the migration from Amazon ECS to EKS for a critical monitoring tool, which saves 200k+ USD per year in running costs.
- Built 4 React UIs to replace legacy dashboards, improving the [usability score](#) from 53 (below average) to 84 (great), and enabling a cost-savings opportunity of 68.1M USD in EU.
- Invited reviewer for the 14th and 15th workshops on Optimization and Learning in Multi-Agent Systems (AAMAS 2023 and 2024), Springer Nature Computer Science, and the Journal of AI Research (JAIR).

Research Engineer

University of Southampton

Oct 2018 – Jun 2022

Southampton, UK

- Member of the centers for [Machine Intelligence](#) and [Maritime Futures](#). Advising a team of 8 people, I helped define and implement Shell's [strategy](#) to reduce greenhouse gas emissions from maritime transport.
- Mentor of 16 [AI postgraduate](#) students. Demonstrator for the [Computer Science \(BSc\)](#) course. I helped hundreds of students with coursework and projects involving Java, C, C++, Python, PyTorch, TensorFlow, MATLAB, machine learning engineering, HPC (PBS, SLURM), agile software development, and SQL query optimization.
- [Invited reviewer](#) for the EURASIP Journal on Wireless Communications and Networking, the 13th Workshop on Optimization and Learning in Multi-Agent Systems (AAMAS 2022), and the Journal of AI Research (JAIR).

Full Stack Software Engineer

ENEA Research Centre

Mar 2014 – Sep 2015

Portici, Italy

- Design, development, and management of wireless sensor networks (Zigbee, BLE, distributed, multi-tiered) for data acquisition and harmonization. Implementation of a real-time web layer for monitoring and predicting the seismic activity of historical and cultural sites.
- Technologies used: C++ (backend, sensor programming); Python and Scikit-learn (MLOps); MEAN stack, RESTful, JSON and XML (frontend); Git, Travis CI, Coveralls and Jira (DevOps).
- The work was part of the national redevelopment project for areas hit by the [2009 L'Aquila earthquake](#).

Backend Software Engineer

ENEA Research Centre

Jun 2013 – Feb 2014

Portici, Italy

- Design, development, and on-field testing of [MONICA](#), a [crowdsensing](#) device for monitoring urban air quality.
- Key contributions: air quality analysis of urban environments; design of wireless sensor networks (BLE, distributed, large-scale); Arduino and Android programming (C++, Java); MongoDB cluster management; MLOps and data fusion (C++, MATLAB); design and 3D printing of prototype cases.
- Based on my Bachelor's thesis, the work received extensive coverage in the national media and won a [EU grant](#).

Education

PhD in Computer Science

University of Southampton

2018 – 2021
Southampton, UK

- Supervisors: [Sarvapali D. Ramchurn](#) and [Danesh Tarapore](#).
- Topics: Distributed Constraint Optimization, Multi-Agent Planning (Routing and Scheduling), Large-Scale and Dynamic Multi-Robot Task Allocation, Real-Time Systems. Main technologies used: Java, C++, Python, CPLEX. Funded by [EPSRC](#) and [AXA Research Fund](#).
- [Invited publication](#) in a special issue of the journal Springer Nature Computer Science.
- Implemented novel real-time multi-agent coordination algorithms, and created a [real-world dataset](#) (1.34 million entities) for simulating the mobilization of fire-fighting UAV swarms.

Master of Science (Summa Cum Laude) in Computer Science

University of Naples Federico II

2015 – 2017
Naples, Italy

- With a second-year scholarship awarded by the Italian government for outstanding academic performance.
- Development of [LURCH](#), an AI-powered robotic assistant for elderly care. Implemented functionalities: collision avoidance, SLAM, human tracking, voice commands. Technologies used: Robot Operating System (ROS), Gazebo, C++, Pioneer 3-DX, Microsoft Kinect, LAMP stack, MATLAB, Shell scripting (Bash).

Bachelor of Science in Computer Science

University of Naples Federico II

2009 – 2013
Naples, Italy

- Invited thesis presentation at [EuNetAir 2nd Scientific Meeting](#), December 2013, University of Cambridge, UK.

Languages

- Italian (native), English (IELTS 7.5 certification), Spanish (full professional proficiency).

Hobbies & Interests

- Music. I studied drums for 6 years, and have been part of numerous amateur and professional bands, playing genres such as jazz, afro-latin, progressive rock, funk, marching band, and avant-garde.
- Cinema. I like filmmakers such as Sergio Leone, Giuseppe Tornatore, Akira Kurosawa, Andrei Tarkovsky, David Lynch, Takeshi Kitano, and Shinya Tsukamoto.
- Literature. Some of my favorite texts are “Candide” by Voltaire, “The Alchemist” by Paulo Coelho, and “The Name of the Rose” by Umberto Eco.