



Gaia Assunta Bertolino

Nationality: Italian **Date of birth:** 05/02/2001 **Gender:** Female

Phone number: (+39) 3383753628

Email address: gaiabertolinoassunta@gmail.com

Website: gaiabertolino.github.io

Website: linkedin.com/in/gaia-assunta-bertolino/

Home: Catanzaro (Italy)

ABOUT ME

Driven by **curiosity** and a passion for **innovation**, I am **focused on harnessing the potential of AI to solve real-world challenges and improve quality of life**. After having obtained a BSc in Computer Engineering in 2022, I'm now completing an MSc in the same engineering field, specializing in Artificial Intelligence and Machine Learning, both of which pursued at the University of Calabria, Italy. I possess **multidisciplinary understanding of key AI fields** such as ML, Computer Vision, Natural language Processing and Data Analysis, along with **core engineering competencies** in systems design, automation and control.

I have actively sought **international exposure**, challenging myself through an "Erasmus Traineeship" in Luxembourg and a Visiting Research period for my master's thesis at the University of Cambridge (UK). These experiences have deepened my expertise in cutting-edge technologies and broadened my perspective on **diverse research methodologies**. Beyond my studies, I'm passionate about **volunteering**, fostering **cultural exchange**, and leveraging technology to **drive meaningful change**.

EDUCATION AND TRAINING

Thesis Research in Machine Learning for Advanced Clinical Consultations – University of Cambridge

[2025 – Current]

City: Cambridge | Country: United Kingdom

Conducting in-person thesis research at the **Department of Computer Science and Technology, University of Cambridge**, under the supervision of **Prof. Cecilia Mascolo** (Head of the Mobile Systems Research Laboratory and Director of the Centre for Mobile, Wearable Systems and Augmented Intelligence, Computer Science and Technology Dept. University of Cambridge, UK) and **Prof. Domenico Talia** (Fleader of the Scalable Computing and Cloud Laboratory <https://scalab.dimes.unical.it/> , DIMES Dept. University of Calabria, IT).

The dissertation focuses on advancing **machine learning models for the automation of clinical consultations and auscultation**. This includes exploring multimodal approaches for the **representation and integration of text and audio data**, leveraging audio signals to extract novel insights, investigating **explainable AI techniques for enhancing model transparency and interpretability**, thus aiming at developing robust solutions for both training on and **exploiting limited datasets effectively**.

This research period is fully funded through an Erasmus MOST (Overseas) scholarship.

MSc in Computer engineering, specialization in Artificial Intelligence and Machine Learning

University of Calabria [2022 – Current]

City: Cosenza | Country: Italy | Website: bit.ly/3QaFfRM | Level in EQF: EQF level 7

Main exam modules: Cloud Computing, **Artificial Intelligence, Computer Vision, Natural Language Processing, Information Retrieval, Distributed Systems**, Knowledge Representation, **Machine and Deep Learning**, Data Mining, Social Network Analysis, Statistical Learning and Ethical and Legal Aspects of Computer Science.

Major projects undertaken:

- *Implementation of a Dynamic Graph Convolutional Neural Network for social network link prediction*
- *Emergency Service Logistics Optimization through Agent-Based Planning*
- *Bank fraud detection through anomaly detection techniques*
- *Power Cable and Tower Detection using Mask R-CNN*
- *Improving RAG indexing through specialized embeddings*
- *Analysis of the effects of tipping prompting strategies on the GPT-o model*

Advanced programming skills in: **Python**, Prolog, Haskell, Docker, **PyTorch**, Plansys2, Pandas, **Scikit-learn**, **Tensorflow**, PDDL4j, Apache Spark, **NetworkX**, **Streamlit**, **PyTorch Geometric**, **Langchain** and **NLTK**.

Awarded a full scholarship each year covering tuition, accommodation and a personal income

Average grade: 26.32/30 - GPA: 3.615

Expected graduation score: 105/110

Expected graduation date: July 2025

BSc in Computer Engineering

University of Calabria [2019 – 2022]

City: Cosenza | Country: Italy | Website: bit.ly/414HPPt | Final grade: 106/110 | Level in EQF: EQF level 6 | Thesis: API Development for IoT Applications using the Mulesoft Suite, Supervisor Prof. G. Fortino (Highly Cited Researcher in Computer Science by Clarivate for five consecutive years)

Main exam modules: Object-Oriented Programming, Data Structures & Algorithms, Operating Systems, **Robotics**, **Automation**, **Telecommunications**, **Control Engineering**, **Digital Electronics**, Design Patterns, Parallel Computing, Database Systems, Linear Algebra, Physics, Calculus and Advanced Math.

Major projects undertaken:

- *VHDL-Based Design and Testing of a 16-Bit Carry Select Adder*
- *Implementation and Verification of a Pipelined Adder-Subtractor in VHDL*
- *Design and Simulation of Industrial Robotic Arms: Kinematics, Trajectory Planning and Control Implementation*
- *Path Planning and Control Strategies for Mobile Robotics: Development and Implementation*
- *Analysis and Design of Linear Control Systems: Transfer Functions, Stability and Frequency Response*

Advanced programming skills in: **Java**, **Matlab**, **VHDL**, **Assembly**, **XML**, **SQL** and **Maple**.

Awarded a full scholarship each year covering tuition, accommodation and a personal income.

Average grade: 26.15/30 GPA: 3.4

Scientific High School Diploma

Liceo Scientifico "Luigi Siciliani" [2014 – 2019]

City: Catanzaro | Country: Italy | Website: liceosiciliani.it | Final grade: 100/100 with honours | Level in EQF: EQF level 4

Selected in 2015, 2017 and 2018 as a **national finalist for the National Individual Mathematical Modeling Competition**, organized under the patronage of the Italian Ministry of Education, Universities and Research (MIUR) at the Department of Mathematics and Computer Science, University of Perugia, which recognize **excellence in mathematical modeling and problem-solving**.

Delivered a presentation on **fractal mathematics in mural art** at the **National Mathematical Communication Competition** held at the University of Perugia (2018) and developed a dedicated app for allowing participants to explore the concepts interactively. The project received a *Special Mention for Creativity and Innovation*.

QUALIFICATIONS

[2023]

National Qualification for the Profession of Junior Engineer

Score: 56/60

Gained expertise in the role of an **engineer**, ethical principles and professional regulations. The qualification covered key topics such as licensing requirements, public procurement laws and workplace safety regulations.

Since January 2024, I have been enrolled in the Provincial Order of Engineers of Catanzaro (Italy) where I am a member of the **Young Engineers Committee**, actively engaging in professional events and discussions, both as a participant and as a speaker.

Link: bit.ly/4jOjLYs

WORK EXPERIENCE

Technical IT Staff

University of Calabria [09/2024 – Current]

City: Cosenza | Country: Italy

Engaged in the IT and cloud systems sector, I provide technical support and drive the maintenance and enhancement of the **University of Calabria's computing and telecommunications infrastructure**, while overseeing the efficient management and **automation of service provisioning**.

Advanced programming skills in: **Perl, Powershell**

API Development Internship

Cap4Lab [10/2021 – 12/2021]

City: Luxembourg | Country: Luxembourg | Website: cap4lab.com/it

Developed a **multi-layer API** using Mulesoft services to optimize a billing management processes. I have ve gained hands-on experience in a dynamic and **international corporate environment**, collaborating within a team to engage with clients, managing project workflows and coordinating tasks. This experience further deepened my understanding of a **developer role in a professional setting**.

Advanced programming skills in: API development, RAML, Dataweave

The traineeship contributed to my thesis research, enhancing my knowledge in API development and integration, and was fully funded through an Erasmus traineeship scholarship

Research Internship in Nuclear Physics for Cultural Heritage Preservation and Urban Pollution Analysis

INFN-LABEC - Laboratorio di tecniche nucleari per l'Ambiente e i Beni Culturali [05/2018 – 05/2018]

City: Florence | Country: Italy | Website: web.infn.it/labec/

Link: bit.ly/42H7SNW

Selected for one out of 15 available positions, ranking fourth. Conducted research on the application of nuclear physics techniques for the preservation of cultural heritage and the study of urban pollution. Focused on cutting-edge, non-invasive methods such as ion beam analysis and **X-ray fluorescence spectroscopy** to analyze atmospheric particulate matter (samples collected in Nigeria) and assess the conservation state of cultural artifacts. This involved designing and performing measurements using the **TANDEM accelerator**, followed by data analysis with specialized software to generate characteristic elemental spectra. Additionally, XRF was used to study the ink composition of a **12th-century papyrus manuscript**, contributing to the understanding of historical preservation techniques.

Research Internship in Nanotechnology and Cosmic Ray Studies

INFN-LNF – Laboratori Nazionali di Frascati [05/2018 – 05/2018]

City: Frascati | Country: Italy | Website: w3.lnf.infn.it/

Link: bit.ly/42H7SNW

Selected for one out of 15 available positions, ranking fourth. I have conducted research at the NEXT Laboratory for Bionanotechnology where I **synthesized nanocomposite materials**, carbon nanoplates, carbon nanotubes and graphite sheets. I then characterized these nanomaterials using Raman **spectroscopy** and scanning electron microscopy (SEM) to study their physico-chemical properties. Additionally, in the Cosmic Ray Laboratory, I participated in **muon detection experiments**, combining theoretical insights into high-energy physics with hands-on data collection using scintillation detectors. The program also provided an **in-depth exploration of experimental research design**, with a particular focus on the OPERA neutrino experiment conducted between CERN in Geneva, CH, and the INFN Gran Sasso Laboratories, IT.

LANGUAGE COMPETENCE

Italian - Mother tongue

English - Level C1

Cambridge Advanced Lev. C1 (CAE) Certification - Score: 194, ID Credential: 195IT2170004

French - Level B1

ENGLISH COURSES ABROAD

[2019]

New City College, London, UK

Awarded a **full scholarship** covering both tuition and accommodation to attend an intensive two-week English program aimed at achieving **C1 proficiency level**

[2018]

Dublin City University, Dublin, Republic of Ireland

Awarded a **full scholarship** covering both tuition and accommodation to attend an intensive two-week English program aimed at achieving **C1 proficiency level**

[2016]

King's College, London, UK

Awarded a **full scholarship** covering both tuition and accommodation to attend an intensive two-week English program aimed at achieving **B2 proficiency level**

VOLUNTEERING

[2021 – Current] Catanzaro, Italy

Rotaract - Active Volunteer and District Adviser

Served as board member and secretary of the local club (2022 – 2023).

District councillor and President of the Environment and Territory Committee (2023 – 2024).

Appointed **District Executive Advisor** (since 2024).

Actively involved in coordinating **service and charity events** benefiting the local community

[2018 – Current] Catanzaro, Italy

FAI - Fondo Ambiente Italiano (the National Trust for Italy) - Active volunteer and past Local Group Leader

Volunteered in organizing events and activities focused on **environmental and cultural preservation**. Led the local youth group from 2021 to 2024, overseeing **awareness projects and managing fundraising**

MANAGEMENT AND LEADERSHIP SKILLS

Co-founder and President of Leonardo engineering student association

Co-founded in 2023 and currently preside since 2024 over Leonardo, the **largest engineering student association** at the University of Calabria, with approximately 500 enrolled members.

Organized orientation events and hosted both **formative and professional seminars** featuring distinguished speakers and professors, some of which held in collaboration with city-based companies, the Department of Civil Engineering and the Department of Computer Engineering, Modeling, Electronics and System, University of Calabria

Student Representative, Scientific Committee of the Technical-Scientific Area Library, University of Calabria

Elected in 2024 with 1,775 votes across 8 university departments, becoming the **highest-voted candidate** in the university's history for this position, I contribute to the BATS Scientific Committee, which oversees the management of **academic resources**

Student Representative, Department of Computer Engineering, Modeling, Electronics, and Systems Council, University of Calabria

Elected in 2022 as the **highest-voted** with 174 votes, I played an active role in **departmental meetings** over my tenure until 2024, working closely with faculty members and institutional stakeholders to address key academic and student life issues

Regional Ambassador for SheTech (Non-Profit)

SheTech is an organization committed to advancing gender equality in the tech and digital sectors. As a local ambassador since 2024, I actively contribute to these efforts by helping to foster an engaged community and providing real opportunities to **support and empower women in technology**.

OTHER MENTORING EXPERIENCE

[2019 – Current]

Student Support and Guidance, University of Calabria

Dedicated to supporting junior colleagues by managing a **public repository** for academic course resources and creating, as well as regularly updating, **communication channels** focused on university news, events and deadlines.

[2023 – 2024]

Mentor, MyFutureBuddy Project – Ortigia Foundation

Mentored students from technical high schools in Southern Italy, with the goal of inspiring and motivating them to pursue higher education.

[2023 – 2024]

Student's Tutor, University of Calabria

Formally employed by the University of Calabria to provide **academic support and guidance** to students, assisting with admissions, academic advising and the graduation process.