




# Michele Ferro

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## ● WORK EXPERIENCE

 **AITHO S.R.L. – CATANIA, ITALY**

**SOFTWARE DEVELOPER APPRENTICE – 5 SEP 2024 – CURRENT**

### Backend Development:


- development of backend applications in *Python (Flask, FastAPI)*;
- design and development of vector databases (*QDrant, Neo4J, MongoDB*) and non-vector databases (*MySQL, PostgreSQL*).

### Data Science:

- development of solutions based on reactive RAG agents using the *LangChain* framework;
- advanced prompting for reactive RAG agents (with LLMs such as *GPT, Claude, DeepSeek*, etc.);
- design and implementation of multi-agent system architectures;
- delivery of university seminars on *LangChain* and cutting-edge AI/LLM technologies (*Agent-to-Agent, MCP*).
- *MLOps* with *MLFlow, Arize AI Phoenix, Langfuse*.

### DevOps/System Administrator:

- service hosting (*Traefik, nginx, Istio*);
- development of automated CI/CD pipelines for builds (*Woodpecker*);
- maintenance and development of architectures via *Ansible*;
- management of *Kubernetes* clusters.

 **AITHO S.R.L. – CATANIA, ITALY**

**SOFTWARE DEVELOPER INTERN (BACKEND & DATA SCIENCE) – 21 FEB 2024 – 20 AUG 2024**

- Backend training (Java, SpringBoot).
- Backend software development.
- RAG architecture design and development using the following technologies: Python, Google Cloud Platform, Azure API (Sharepoint), Git Api (Gitea), LangChain, Google Gemini.
- CI/CD management for deployments.
- Backend development of external integrations for LLM chatbots through the following technologies: TypeScript, NextJS, Google Drive API, Slack API, Vercel, Supabase, Pinecone.
- Backend development for LLM chatbot on Slack.
- MongoDB backend design and development.

 **UNICT - LAPOSS – CATANIA, ITALY**

**CURRICULAR RESEARCH INTERNSHIP – 3 APR 2023 – 10 JUN 2023**

- Study of large unstructured data analysis techniques (text, web data, digital activity logs, etc.).
- Learning advanced data analysis techniques (e.g., Machine Learning) for extracting information from data provided by companies that participated in the project.
- Learning techniques for measuring a company's "reputation," e.g., in terms of sustainability, and the "sentiment" expressed on social media regarding the products/services offered by the same company.

- Involvement in multidisciplinary working groups, with students from other departments (e.g., Dept. of Mathematics and Computer Science), professionals and industry experts.
- Qualitative evaluations on the outputs of the algorithms used and based on these evaluations propose possible modifications to the input data and/or analysis techniques.

## ● EDUCATION AND TRAINING

OCT 2021 – 2023 Catania, Italy

**MASTER DEGREE IN COMPUTER SCIENCE** Università degli Studi di Catania

**Field of study** Machine learning, Deep learning, Computer Vision, Artificial Intelligence, Data Science, Image Processing |

**Final grade** 110 cum laude | **Number of credits** 120 |

**Thesis** Knowledge extraction from sustainability reports using computer vision-based heuristics

2017 – 22 APR 2021 Catania, Italy

**BACHELOR DEGREE IN COMPUTER SCIENCE** Università degli Studi di Catania

**Field of study** Software and applications development and analysis , Computer use , Information and Communication Technologies (ICTs) not further defined

**Final grade** 103/110 | **Number of credits** 180 |

**Thesis** Sviluppo di add-on per Blender: applicazioni nell'archeologia e nell'ingegneria edile

2012 – 2017 Caltanissetta, Italy

**HIGH SCHOOL DEGREE** Liceo Scientifico A. Volta

**Address** 93100, Caltanissetta, Italy | **Final grade** 87/100

## ● SKILLS

Python (avanzato) | Machine learning | Deep Learning | Computer Vision | Git | Linux | OpenCV | C++ | C | Data Science | Data Collection, Data Processing, Data Analysis, Data Visualization | Grafica 3D (Blender) | Docker | Google Cloud Platform | Java | MongoDB | CI/CD | Kubernetes | Istio | MLOps | GitOps | DevOps | Microsoft Azure

## ● LANGUAGE SKILLS

Mother tongue(s): **ITALIAN**

Other language(s):

	UNDERSTANDING		SPEAKING		WRITING
	Listening	Reading	Spoken production	Spoken interaction	
<b>ENGLISH</b>	B2	C1	B2	B2	C1
<b>FRENCH</b>	A1	A1	A1	A1	A1

*Levels: A1 and A2: Basic user; B1 and B2: Independent user; C1 and C2: Proficient user*

## ● PUBLICATIONS

2021

[\*\*Abstracting Stone Walls for Visualization and Analysis\*\*](#)

An innovative abstraction technique to represent both mathematically and visually some geometric properties of the facing stones in a wall is presented. The technique has been developed within the W.A.L.(L) Project, an interdisciplinary effort to apply Machine Learning techniques to support and integrate archaeological research. More precisely the paper introduces an original way to “abstract” the complex and irregular 3D shapes of stones in a wall with suitable ellipsoids. A wall is first digitized into a unique 3D point cloud and it is successively segmented into the sub-meshes of its stones. Each stone mesh is then “summarized” by the inertial ellipsoid relative to the point cloud of its vertices. A wall is in this way turned into a “population” of ellipsoid shapes statistical properties of which may be processed with Machine Learning algorithms to identify typologies of the walls under study. The paper also reports two simple case studies to assess the effectiveness of the proposed approach.

## ● HONOURS AND AWARDS

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14 DEC 2023

### Nominee "Premio Archimede" 20th Ed. 2024 (Academic Year 2022/2023) – Dipartimento di Matematica e Informatica - Università degli Studi di Catania

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The "Premio Archimede" prize is awarded (since 2005) every year by the Computer Science Courses of Study, incardinati in the Department of Mathematics and Computer Science, to recent graduates of Computer Science First Level and Master's degrees from the University of Catania, who have achieved excellent results during their student career and in their final thesis work.

## ● PROJECTS

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FEB 2023 – DEC 2023

### SustiNEO Extractor

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Python utilities that can be used to extract data from sustainability reports and reinterpret them in a structured shape.

(Master's thesis project)

Link [https://github.com/nebuchadneZZar01/sustineo\\_extractor](https://github.com/nebuchadneZZar01/sustineo_extractor)

2020 – 2021

### PointCloudStats-blender

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Blender add-on able to retrieve geometrical data from meshes in a collection, synthesize them using central tendencies, dispersion indexes and inertia tensor and export it in a CSV file.

(Bachelor's thesis project)

Link <https://github.com/nebuchadneZZar01/PointCloudStats-blender>

## ● DRIVING LICENCE

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Driving Licence: B