

Mario Avolio

ARTIFICIAL INTELLIGENCE ENGINEER · SOFTWARE ENGINEER

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Education

University of Milano Bicocca

M.S. IN COMPUTER SCIENCE (GRADE: 110/110 CUM LAUDE)

Milan (MI), Italy
Sept. 2021 - March 2024

- **Thesis title:** *Self-Supervised Learning And Model Adaptation For Facial Attribute Classification*
- **Project:** Developed an advanced framework using Self-Supervised Learning and Model Adaptation to enhance facial attribute classification, achieving high accuracy on diverse datasets.

University of Calabria

B.S. IN COMPUTER SCIENCE (GRADE: 108/110)

Arcavacata (CS), Italy
Sept. 2018 - Sept. 2021

Experience

Imaging and Vision Laboratory (IVL)

RESEARCH FELLOW

Milan, Italy
Jan. 2025 - Present

- Built a large-scale **synthetic Side-Scan Sonar (SSS) dataset** of 20,000+ labeled images in both **High Resolution** and **Lower Resolution** for underwater mine detection, surpassing the scale of existing public datasets.
- Applied and optimized **Super Resolution models (SPAN, DRCT)** to mitigate spatial degradation, achieving detection performance comparable to or exceeding High Resolution data.
- Developed and trained lightweight **YOLOv11n/s detectors**, demonstrating robust mine detection in challenging, low-visibility environments.

Skills

Programming Languages	Python, R, Java, C++, C, MATLAB, JavaScript, Perl, Bash
Frameworks & Libraries	TensorFlow, PyTorch, Keras, Scikit-learn, OpenCV, Matplotlib, Pandas, Numpy, Seaborn, Hugging Face Transformers, Haystack, LangChain, Plotly, Spring
Computer Vision	Adaptive Algorithms, Image Quality Assessment, Object & Image Recognition, Multimedia Indexing & Retrieval, Image Super-Resolution
Robot Localization & Mapping	Bayesian Filtering, Robot Motion & Perception, SLAM (EKF, FAST, Graph-Based)
Natural Language Processing	Text Classification & Sentiment Analysis, Named-Entity Recognition, Topic Extraction, Text Summarization, Text Generation, Question Answering & ChatBot
Cloud	AWS
Containers	Docker, Kubernetes
Databases	MariaDB, SQLite, MySQL, PostgreSQL, MongoDB, SQL, Neo4J
Technologies & Tools	Git, Android Studio, Unity3D
OS	Linux (Debian & Red Hat based), Windows
Languages	English, Italian

Research Publications

Large-Scale Synthetic Side-Scan Sonar Dataset Generation and Super-Resolution Enhancement for Underwater Mine Detection [Best Paper Award]

FIRST AUTHOR

ICIAP 2025, Rome, Italy
Sept. 2025

From Vision to Execution: Enabling Knowledge Representation and Reasoning in Hybrid Intelligent Robots Playing Mobile Games

CO-AUTHOR

KR 2023, Rhodes, Greece
Sept. 2023

- Presented a hybrid AI framework integrating vision and symbolic reasoning for autonomous robotic gameplay.
- Demonstrated applications in match-3 and ball-sorting games using a delta robot with vision-based object recognition.