Mario **Avolio**

COMPUTER & ROBOT VISION · NATURAL LANGUAGE PROCESSING

📱 (+39) 3791944042 | ✉ marioavolio@protonmail.com | 🐙 MarioAvolio | 🦋 MarioAvolio | 💼 MarioAvolio

Education

University of Milano Bicocca   *Milan (MI), Italy*

M.S. IN COMPUTER SCIENCE (GRADE: 110/110 CUM LAUDE)   *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.
- Keywords: Facial Attribute Classification, MAAD-Face Dataset, CelebA Dataset, Self-Supervised Learning, DINOv2, Low-Rank Adaptation (LoRA), Parameter-efficient Model Adaptation for Vision Transformers (PEViT), Dataset Quantization (DQ)

University of Calabria   *Arcavacata (CS), Italy*

B.S. IN COMPUTER SCIENCE (GRADE: 108/110)   *Sept. 2018 - Sept. 2021*

- **Thesis title**: *Dalla visione all'azione: moduli di ragionamento automatico full-stack*
- **Project**: Developed "BrainyBot", a robotic system capable of autonomously solving complex mobile games like Candy Crush Saga and Ball Sort Puzzle through touch screen interaction.
- Keywords: Answer Set Programming (DLV2), Object & Image Recognition, Knowledge Representation, Sense-Think-Act paradigm

I.I.S. Silvio Lopiano   *Cetraro (CS), Italy*

SCIENTIFIC HIGH SCHOOL DIPLOMA   *Sept. 2013 - July 2018*

Skills

Programming Languages	Python, R, Java, C++, C, MATLAB, Perl, Bash
Frameworks & Libraries	TensorFlow, PyTorch, Keras, Scikit-learn, OpenCV, Matplotlib, Pandas, Numpy, Seaborn, Hugging Face Transformers, Haystack, LangChain, Plotly, EmbASP
Computer Vision	Adaptive Algorithms (contrast, noise reduction, artifact removal), Image Quality Assessment, Object & Image Recognition (Traditional & Deep Learning), Multimedia Indexing & Retrieval, Image Super-Resolution
Robot Localization & Mapping	Bayesian Filtering (Gaussian Filters, Nonparametric Filters), Robot Motion & Perception, SLAM (EKF, FAST, Graph-Based)
Natural Language Processing	Text Classification & Sentiment Analysis, Named-Entity Recognition (CRFs, neural extensions), Topic Extraction (LDA, Neural Topic Models), Text Summarization, Text Generation, Question Answering (Retriever-Reader Architectures & RAG)
Answer Set Programming	DLV2
Technologies & Tools	Linux, Git, Android Studio, Unity3D, Jupyter Notebooks, RStudio, PyCharm IDE, LINGO, OPL-CPLEX, Docker
Automation & CI/CD	GitLab CI/CD, GitHub Actions, Make, Maven, Gradle, CMake, systemd
Databases	MariaDB, SQLite, MySQL, PostgreSQL, MongoDB, SQL, Neo4J
Languages	English, Italian

Research Publications

From Vision to Execution: Enabling Knowledge Representation and Reasoning in Hybrid Intelligent Robots Playing Mobile Games   *KR2023*

CO-AUTHOR   *Rhodes, Greece | September 2-8, 2023*

- The paper explores the automation of interactions with touch surfaces, presenting a delta robot designed to engage in match-3 games and ball-sorting puzzles on mobile phones. This robot employs a vision module to identify objects by color and shape, and utilizes declarative models for decision-making based on game rules and strategies. By integrating AI techniques such as vision processing and answer set programming, the system simplifies motion control through its delta robot configuration. The authors detail the components of their robotic application, demonstrating its capabilities through implementations of various games. They suggest that this approach facilitates innovative combinations of knowledge representation and robotics, offering a controlled environment for experimenting with hybrid reasoning methods without the burden of technical implementation.
- Keywords: Applications of KR in robotics, Applications of KR Integrating symbolic and sub-symbolic approaches, KR related tools and systems.

Honors & Awards

DOMESTIC AWARDS

July 2021 **Best Students 2020 Award**, Graduation Day
University of Calabria