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Dylan Savoia

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WORK EXPERIENCE

06/12/2023 – CURRENT Rome, Italy

MACHINE LEARNING ENGINEER CY4GATE

- Built anomaly detection systems integrating **ElasticSearch** and a distributed-cache system through **Hazelcast**. Ensured efficient deployments into production with **Docker** and **Kubernetes (K8S)**.
- Developed a **Transformers based** anomaly detector using the **sentence-transformer** library to explore advanced text analysis solutions.
- Delivered a continuous learning proof-of-concept applying **OneClass SVM** and **Half-Space Trees** to solve client's data-drift issues.
- Defined efficient workflows developing custom **PIP packages** and tools to manage external data storage with **Azure Blob Storage** to optimize deployment procedures.

13/09/2021 – 05/12/2023 Rome, Italy

EMBEDDED SOFTWARE ENGINEER CAPGEMINI ENGINEERING

Successfully developed projects on **embedded devices** involving complex **User Interfaces** and **AI models**:

- Built a UI Framework for a ground-vehicle for a major Defense company using **Qt/QML** 5.15 and **modern C++**.
- Optimized memory usage in a **Computer Vision** pipeline on a low-specs embedded device. Successfully **reduced memory requirements by 50%** enhancing the pipeline's performance and efficiency.
- Participated in writing formal **economical offers** and actively contributed to the development of internal **assets**.
- Explored the use of Yolo-V5 and synthetic data in the context of an **Augmented Reality** R&D project.

EDUCATION AND TRAINING

23/09/2019 – 26/05/2021 Rome, Italy

MASTER DEGREE IN ARTIFICIAL INTELLIGENCE AND ROBOTICS Università La Sapienza

Successfully completed the "**Excellence Path**" program at La Sapienza University, a prestigious academic trajectory dedicated to high-achieving students.
Extensively engaged with diverse fields and projects during my Master's studies, enhancing expertise in cutting-edge technologies and applications.

- Applied **Graph Neural Networks** to develop Quantitative Structure-Activity Relationship (QSAR) models in Computational Chemistry, for advanced predictive modeling.
- Delved into **Natural Language Processing** (NLP), applying Long Short-Term Memory (LSTM) networks and Transformers for tasks like Named Entity Recognition and Semantic Role Labeling.
- Implemented trajectory planning algorithms for **Robotics** within simulated environments using MATLAB.
- Proficiently navigated **Reinforcement Learning** techniques and implemented from scratch the Proximal Policy Optimization algorithm (PPO).
- Explored **Human-Robot Interaction,** understanding the design challenges of effective human-centered robotic systems.

Master Thesis: Molecule Generation from Input-Attributions over Graph Convolutional Networks
Develop a new "molecules generation" algorithm using Explainable AI methods (XAI) over QSAR models based on Graph Convolutional Networks (GCNs). The algorithm generates new molecules that optimize a property/activity of interest. Some of the limitations of the system have also been explored including over-optimization and usage outside the applicability domain.

Final grade 110 with Honors

2016 – 22/03/2019 Rome, Italy

BACHELOR DEGREE IN COMPUTER AND CONTROL ENGINEERING Universita La Sapienza

Completed the "**Excellence Path**" program of La Sapienza for the Bachelor Degree.

- Acquired a solid foundation of Computer Science principles and proficiency with foundational **Algorithms and Data Structures**.
- Explored **low-level programming** using Assembly language (AT&T syntax), gaining insights into hardware interactions and system-level programming.
- Developed Computer Vision projects using **Deep Learning** models.

Bachelor Thesis: Reinforcement Learning for autonomous driving in TORCS
Train a Reinforcement Learning agent to complete speed-race tracks on "TORCS" (The Open Race Car Simulator) using the DDPG algorithm (Deep Deterministic Policy Gradient) on a continuous action-space environment.

Final grade 110 with Honors

LANGUAGE SKILLS

Mother tongue(s): **ITALIAN**

Other language(s):

	UNDERSTANDING		SPEAKING		WRITING
	Listening	Reading	Spoken production	Spoken interaction	
ENGLISH	C1	C1	B2	B2	C1

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

JOB-RELATED SKILLS

Machine Learning and Robotics

- Experience with Python's Deep Learning and ML libraries: **PyTorch**, Tensorflow / TF-Lite, Scikit-Learn.
- Numerical & Visualization Tools: **Numpy**, Pandas, Matplotlib.
- Completed Andrew Ng's **Machine Learning** and **Deep Learning Specializations** (Coursera)

Programming Languages

Python, C++, C, Javascript, PHP, Bash, Lua

Developer Tools

- **Git, GitLab**: source version control and Wiki documentation.
- **Docker, Kubernetes (K8S)**: Virtualization and deployment tools.
- **LaTeX**: Text Formatting.
- **AWK, sed**: Text manipulation languages.
- **GDB, CMake, Valgrind**: compiling and debugging tools.

Interests

I enjoy keeping up-to-date with research in the field of AI and in particular **Interpretability and Safety** research around **Large Language Models (LLMs)**.

INFORMATION PRIVACY

Information Privacy

In compliance with the GDPR and the Italian Legislative Decree no. 196 dated 30/06/2003, I hereby authorize the recipient of this document to use and process my personal details.