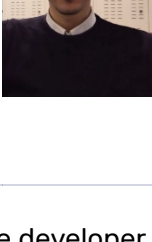


Giovanni Martucci

Data scientist - Cybersecurity specialist - Full-stack Developer - Software Engineer/Developer - Cloud Engineer/Developer

CONTACT INFORMATION

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Github: <https://github.com/Giovanni-Martucci>



OBJECTIVE

Professions: Data scientist, Machine/Deep learning engineer, Software developer, Full-stack developer, Cloud system developer, IT Security, Penetration tester.

EXPERIENCE

Roma

Jun 2023 - Present

Data Scientist/Engineer

Target Reply

Machine Learning • Data Science • Generative AI • Python • Deep Learning • NLP • Amazon Web Services (AWS) • Big-Data • SparkMachine Learning • Spark • Hue • Scripting • Automatization • SQL

Catania

Jan 2023 - May 2023

Samsung Innovation Campus

Samsung/University of Catania

The course, which selected the top 25 students, focuses on topics of Internet of Things applied to the Consumer Electronics market, Machine Learning, Deep Learning, Artificial Intelligence, Computer Vision, Cybersecurity, Cloud and Big Data.

Link: <https://www.samsung.com/it/campaign/innovation-campus/>

Catania

Jan 2023 - Present

Computer Vision Engineer / Research Assistant

University of Catania

Research activities with IPLab, ARSLab and STMicroelectronics.

Hatfield, England, United Kingdom

Jan 2022 - Jul 2022

Erasmus: master thesis project

University of Hertfordshire

Erasmus focused on developing the master thesis project titled: AI and Computer Vision techniques applied to problem of underestimating distance perceptions in VR environments.

Catania

Jul 2020 - Feb 2022

Research Assistant

University of Catania

This research project, called "Saturn", approved by MiSE, involves STMicroelectronics and the research team from the University of Catania, which aims to find a solution to an NP-Hard scheduling problem. Several strategies are employed in this project to find the optimal solution, including Greedy methodologies, operational programming, machine learning strategies, reinforcement learning, and CSP.

Catania

Dec 2020 - May 2021

Internship

iCTLab

Research and development of deep learning strategies for the identification of DeepFake.

Catania

Jul 2019 - Dec 2019

Internship

TIM Wave

Internship carried out at Tim's Joint Open Lab for the development of Re-Identification systems in the smart city context, obtaining a system for searching for hidden or missing individuals using advanced Computer Vision and Machine Learning techniques.

Catania

Apr 2021 - Apr 2021

FameLab21

University of Catania

Scientific dissemination: DeepFake theme

Apr 2018

Web Developer

Development of websites, web apps, and applications for various clients. The technologies used are Angular, React Native, Bootstrap, Materialize CSS, Firebase, Nodejs, Express.js, Javascript, HTML.

EDUCATION

Catania

2015 - 2019

Computer science degree

University of Catania

Subjects studied:

- Advanced Programming Laboratory. 2
- Algorithms
- Architecture of Elaborators
- Competitive and Distributed Programming Techniques
- Computer Forensics
- Computer Networks
- Data Mining
- Databases
- Discrete Mathematics
- Elements of Mathematical Analysis
- English
- Fundamentals of Informatics
- Interaction and Multimedia
- Internet Security
- Mathematical and Statistical Methods
- Operating Systems
- Physics
- Programming 1
- Programming 2
- Software Engineering
- Internship in TIM Wave

I have a bachelor degree in Computer Science, with an experimental thesis entitled "Development of Re- Identification systems in the Smart City environment". 105/110.

Catania

2020 - 2023

Master Degree in Data Science, Artificial Intelligence and Cybersecurity

University of Catania

Subjects studied:

- Algorithms and complexity
- Analytical-forensic methods for scientific investigations (means)
- Artificial intelligence and laboratory
- Big data
- Cloud systems and IoT (AWS)
- Computer security
- Computer vision
- Distributed systems engineering
- English
- Enterprise Startup and Business Models
- Fundamentals of data analysis
- Machine/Deep learning
- Optimization
- Vulnerability Assessment and Penetration Testing (VAPT)
- Internship in ICTLab

I have a master degree in Data science and Artificial Intelligence, with an experimental thesis entitled "AI and Computer Vision techniques applied to the problem of underestimating distance perceptions in VR environments". 110/110 cum Laude.

LANGUAGES

Italiano

Inglese (B2)

SKILLS

Conoscenza dei seguenti linguaggi di programmazione: C++, C, Java, Python, Assembly, SQL, JavaScript, Processing, React Native
AWS Amazon, Docker, MQTT, REST APIs
Problem solving
Linux

Esperienza con i seguenti Framework: Pytorch, Node.js, Express.js, Bootstrap, Angular, Firebase, React Native, Materialize CSS, Selenium, Appium, Telegram Bot API
Team working
Deep learning, VAPT
Latex

PROJECTS

All projects are available on Github: <https://github.com/Giovanni-Martucci?tab=repositories>

Deep learning project:

In this project it's possible to see an implementation of ResNet-18 pre-trained to resolve a task of classification of medical images using the framework Pytorch Lightning.

Market analysis - Data analysis:

The subject of this project is the study and analysis of customer personality, aiming for a detailed analysis of ideal customers for a company. This analysis helps to better understand customers needs, preferences, and behaviors, allowing the company to modify its products according to the specific requirements of different types of customers and to direct its marketing activities towards customer groups more likely to purchase the offered products. This project illustrates and uses the main methodologies of data analysis. In detail, we will see:

Data Cleaning and Pre-processing;

Density analysis;

Data normalization;

Dimensionality reduction: through PCA and LDA;

Linear regression;

Clustering: K-means;

Classification using: Logistic Regression, Naive Bayes, LDA, QDA, SVM, decision trees, tree forests, K-NN, neural network;

Ensemble methodologies;

Cross-validation of generated models.

Neural network for classification (CNN):

The task of this project is to "classify the different touches of the various knobs in a domestic oven". Specifically, given an oven, our algorithm, through a specially trained neural network, must be able to recognize if no knob is being touched, or if one is being touched, which one specifically.

In this project, we had to work with images, used as input for our network. This is why we used a Convolutional Neural Network (CNN) which allows neural networks to be applied to image processing, able to scale large images and large datasets of images.

This problem of classifying touch/no-touch in a domestic oven, can actually be extended to industrial machinery by considering actions that result from specific choices.

Big Data Projects and Methodologies:

These projects make use of the primary Big Data methodologies, including:

- Hadoop: Hadoop is a framework for distributed storage and processing of large datasets across clusters of computers. It allows for parallel processing of data and fault tolerance, making it a popular choice for big data applications.
- Pyspark/ Spark: Spark is an open-source distributed computing system that is designed to be fast, flexible, and easy to use. It is built on top of the Hadoop Distributed File System (HDFS) and allows for in-memory processing of large datasets.
- LSH: Locality-Sensitive Hashing (LSH) is a technique used in data mining and machine learning to approximate similarity between data points. It is commonly used in applications such as nearest neighbor search and recommendation systems.

Together, these technologies form a powerful ecosystem for processing and analyzing big data, allowing for efficient storage, processing, and analysis of massive datasets.

Minimum weight vertex cover problem with Iterated Local Search (ILS):

The aim of the project was to study and implement the Iterated Local Search to solve the problem of the Minimum Weight Vertex Cover belonging to the group of problems NP-Complete, therefore unsolvable with deterministic algorithms. A local search starts from a valid solution and iteratively builds a new solution trying to improve it until reaching a global optimal. During the execution of the algorithm the solution may end up in a very good local. Thanks to the perturbation operators and the acceptance criteria, the solution of local optimal is then removed by exploring new areas of the research space.

Computer Vision Projects:

- Camera calibration;
- Creation of a stereoscopic system;
- Measurement of real-world objects;
- Texture classification
- Deep learning

Cloud project - AWS + Docker:

This project aims to develop a web-app in a distributed manner on AWS (using different AWS services offered by Amazon) with a dockerization system (Docker). The application contains a control dashboard for real-time monitoring of data extracted from microcontrollers on Arduino. Specifically, from the web interface, it is possible to retrieve, through a dedicated box, data generated by microcontrollers for the probability of rain, the probability of sunny weather, and temperature. Data extraction occurs through micro-services implemented in nodejs, which are invoked by the back-end connected to the web interface. They intercept the last message sent on the channel by Arduino, through a specific configuration of the MQTT communication protocol, in which Arduino is involved as a publisher, therefore publishing the values to a channel, while the microservices act as subscribers to the channel. Once the requested values are intercepted, they are sent to the web interface that triggered all the cascade calls.

Bioinformatics project:

This project aims to identify patients with similar tumors by analyzing the biological processes of different patients and finding similar patterns among them, using data-mining and big-data techniques.

The software and algorithms used are:

- "Mithril" algorithm, which was used to map expression values to corresponding genes in the network and assigned a perturbation value to each gene of each patient;
- Multimotif: a software that can calculate motifs for each patient's meta-pathway, finding the most recurring labeled subgraphs in the network.

Vulnerability-Assessment-and-Penetration-Testing:

The project aims to penetrate a server by gaining access to the website hosted on the server. Once access to the server is obtained, using the web application as an attack vector, different privilege escalation techniques will be employed to obtain a reverse shell with root privileges (obtaining remote control of server with administrator privileges).

Security project:

Study and exploitation of a known vulnerability in IBM Q-Radar software.

Automation Extraction:

In this project, you can observe various automation techniques, including:

- Selenium
- Appium (Android)
- Scripting (Python)
- REST API

Design patterns:

- Implementation of communication through RabbitMQ: Routing and RPC.

- Design and development of the following design patterns to increase the level of security and performance in the application developed during the cloud project on AWS:

- Reference Monitor;
- Timeout;
- Cache system.

Insurance app:

In this project an application for an insurance agency has been developed. In particular, two versions have been developed, one for customers and one for insurers. The customer version allows you to immediately send photos, location and other details of a road accident to your appraiser. The version for insurers will provide a list of all road claims made by a customer. The applications were developed using React-Native with the addition of Firebase.

IoT project:

The system developed aims to detect the presence of combustible gases and smoke through the use of a gas sensor, in order to increase safety and prevent fires and casualties in homes, offices, etc.