



## CONTACT



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# SALVATORE PETROLO

## COMPUTER SCIENCE ENGINEER

### ABOUT

I am a MSc Artificial Intelligence and Machine Learning Engineer. I am very determined and enthusiastic, I have developed good planning and organisational skills.

I'm confident working independently or as part of a team, I enjoy facing new challenges and developing my own solution for them. I'm resilient and very curious, I love learning new things, every day.

### EDUCATION

#### Master's Degree: Artificial Intelligence and Machine Learning

*Univeristy of Calabria, Arcavacata (CS) | 2020 - 2022*

Thesis: "Deep Anomaly Detection on ECG for identifying arrythmias".

Degree Score: 110/110 with honors and academical mention.

#### Bachelor's Degree: Computer Science Engeneeing

*Univeristy of Calabria, Arcavacata (CS) | 2016 - 2020*

Thesis: "Object Oriented Data Language: a language for devoloping dynamic data collection web app".

Degree Score: 110/110 with honors.

#### Diploma: Technical Institute in Computer Science

*IIS Vibo, Vibo Valentia (VV) | 2011 - 2016*

Degree Score: 100/100.

## SOFT SKILLS

Problem Solving

Communication

Presentation

Self Starter

Leadership

Teamwork

Resilience

## LANGUAGES

Italian: Native Speaker

English: IELTS B2

## HARD SKILLS

Over time, I've been continuously increasing my knowledge.

### Programming Languages

- Assembly
- C
- C++
- Cuda C/C++
- C#
- Python
- Lisp
- Swift
- Java
- Php
- Javascript
- Typescript

### Libraries for Machine & Deep Learning

- NumPy
- Pandas
- SciPy
- TensorFlow
- PyTorch
- TorchVision

### Operating Systems & Shells

- Linux
- Mac Os
- Windows
- Bash
- Zsh
- PowerShell

### Cloud Services

- Microsoft Azure
- Google Cloud Platform
- Amazon Web Services

## CERTIFICATIONS

**Cisco CCNA 1: Routing and Switching - 2016**

**Cisco IT Essential - 2015**

**IELTS B2 - 2015**

## THESIS PROJECTS

Below is a list and a brief description of my Bachelor and Master Thesis projects. A more detailed description can be found on the corresponding GitHub repo.

### OODL Project



*Bachelor's Degree Project*

Object Oriented Data Language (OODL) is an imperative programming language I developed for my Bachelor's Degree thesis. OODL makes developing a web application for collecting data as easy as instantiating an object in any object oriented programming language.

OODL was designed to allow developers to build dynamic web applications for data collections (also very complex ones) which execute client-side.

### DPNet Project



*Master's Degree Project*

Development of an Artificial System which is able to identify arrhythmia episodes in 15-leads ECG.

The problems of identifying arrhythmias in ECG has been addressed as Semi-Supervised Anomaly Detection Task. So, in this context, arrhythmias can be seen as anomalies into normal ECGs.

The system's core is a Deep Convolutional AutoEncoder to whom i've given the name DPNet.

## ACADEMICAL PROJECTS

Below is a list and a brief description of some of my projects. A more detailed description along with source code can be found on the corresponding GitHub repo.

### Artificial Intelligence & Knowledge Representation and Reasoning Project



*Team Project*

Java implementations of an automatic player for the Murus Gallicus game. A parallel implementation of the well-known MiniMax algorithm with Alpha Beta pruning.

### Images and Videos Analysis Project



*Team Project*

Multi-Class and Multi-Label Classification on an unbalanced film trailer dataset in Python. In this project the well-known image classification architectures ResNet and Vgg have been used as part of a custom modular architecture. PyTorch has been used as Gradient Computing library.

### Architectures and Programming of Processing Systems Project



*Individual Project*

Various C & Assembly optimized version of the Stochastic Gradient Descent x SoftSVM x Polynomial Kernel Method algorithm. Provided optimizations make use of advanced programming concept such as SIMD parallelism, which is exploited by using Intel SSE and AVX instruction sets, and Cache Blocking.

### Big Data Management Project



*Individual Project*

Implementation of a query tool in Python using the Big Data Processing tool, Apache Spark and the No-SQL datastore MongoDB. PySpark and PyMongo were used to interface with Spark and MongoDB.

## Bl3 Project



*Individual Project*

Bl3, whose name derives from Bluetooth low energy, is a distributed system that allows Covid-19 contact tracing. The system consists of an Android Application and a JavaEE Backend.

## Data Mining Project



*Team Project*

The project consists in Data Analysis, Exploration and Multi-Class Classification on a Google Play Application Dataset in Python.

## GPGPU Project



*Individual Project*

CUDA C parallel implementation of the Merge operation. Algorithm's parallelization is based on the co-rank function provided by Siebert et al. in their work Efficient MPI Implementation of a Parallel, Stable Merge Algorithm.

## Machine and Deep Learning Project



*Individual Project*

Application of Machine and Deep Learning techniques in Python on images and texts. On both datasets two tasks were addressed: Multi-Class Classification and Anomaly Detection. The TensorFlow library has been used for developing Deep Learning models.

## Software Platforms for Web Applications



*Individual Project*

Implementation of ShopCart web application. In this project the following technologies were used: Anguar (to define a Single Page Application), JavaEE + JAX-RS + EJB (to provide REST web serving and defining business logic), JPA + Hibernate (for persistency).

## Social Network and Media Analysis



*Individual Project*

Sentiment Analysis in Python on an amazon english reviews dataset using various Transformer architectures from Hugging Face. PyTorch has been used as Gradient Computing Library.

## Software Engineering Project 1: Scheduler



*Individual Project*

Java Implementation of Scheduler with constraints based on the backtracking algorithm. Several Design Pattern were used. A GUI has been provided too.

## Software Engineering Project 2: Sudoku



*Individual Project*

Java Implementation of Sudoku Solver based on the backtracking algorithm. Several Design Pattern were used. A GUI has been provided too.