SALVATORE PETROLO

COMPUTER ENGINEER
AI & MACHINE LEARNING ENGINEER.

ABOUT

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

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

Thesis: "Deep Anomaly Detection in ECG Signals to Detect Arrhythmias".

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

Bachelor's Degree: Computer Engineering

University 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*

Diploma Score: 100/100.

CONTACT

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CERTIFICATIONS

CISCO CCNA 1

CISCO IT Essential

IELTS B2

SOFT SKILLS

Problem Solving, Communication, Presentation, Self Starter, Leadership, Teamwork, Resilience.

HARD SKILLS

Programming

Assembly, C, C++, C#, Java, Python, Lisp, Swift, Php, Javascript, Typescript, Data level parallelism, SIMD, CUDA, Task level parallelism, Multi-Threading, Distributed Systems.

Machine & Deep Learning

NumPy, Pandas, SciPy, Scikit-Learn, OpenCV, PIL, TensorFlow, Keras, PyTorch, TorchVision, Matplotlib, Seaborn, Nltk, Data Analysis, RNN, LSTM, CNN, AE, VAE, GAN, Transformers, NLP, NLU, Object Detection, Instance and Semantic Segmentation.

Big Data Management

Apache Spark, Apache Storm, Apache Kafka, MapReduce, HDFS, NFS, PySpark, PyMongo, No-SQL Datastore, Functional Programming.

Databases

MySQL, PostgreSQL, MongoDB, SQL, Data Warehouse, Data Lakes, ETL, ELT.

Web Development

JavaEE, EJB, JPA, JSF, JSP, Angular, JBoss, Apache Tomcat, Hibernate, Rest Web Services, Single Page Applications, Json, XML, SOAP.

Mobile Development

Android: Android Studio, Java. | iOS: Xcode, Swift.

Cloud Services

Microsoft Azure, Google Cloud Platform (GCP), Amazon Web Services (AWS).

Operating Systems, Shells & Cli

Linux/Unix, Mac Os, Windows, Bash, Zsh, Powershell, Networking, System Administration.

Software Development Methodologies & Tools

Agile Software Development, Scrum, Extreme Programming, Test Driven Development, Unit Testing, Maven, Gradle, VCS, Git, BitBucket, GitHub.

THESIS PROJECTS

DPNet

Master's Thesis Project

Development of an artificial intelligence System that is able to detect arrhythmia episodes in arbitrary length 15-leads ECGs. The problem of detecting arrhythmias in ECGs has been addressed as Semi-Supervised Anomaly Detection Task. This allowed to reduce costs and time for realizing this kind of systems since everything the system needs is a big enough quantity of normal data. The system core is an ad-hoc designed convolutional autoencoder called DPNet.

OODL

Bachelor's Thesis Project

Object Oriented Data Language (OODL) is an imperative programming language I developed to make 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 without writing a line of html or css, the OODL interpreter will do it instead.

ARTIFICIAL INTELLIGENCE RELATED PROJECTS

Artificial Intelligence & Knwoledge Rapresentation and Reasoning

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 has been provided.

Machine and Deep Learning

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. TensorFlow has been used for developing deep learning models.

Images and Videos Analysis

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.

Data Mining

Team Project

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

Big Data Management

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.

Social Networks and Medias Analysis

Individual Project

Sentiment Analysis in Python on an amazon english reviews dataset using various Transformer architectures from Hugging Face. High accuracy obtained by using pre-trained transformers as feature extractors.

SOFTWARE ENGINEERING RELATED PROJECTS

Distributed Systems and Cloud Computing

Individual Project

Development of a distributed system that allows Covid-19 contact tracing. The system is made of an Android Application and a JavaEE rest backend. The Android app uses the Bluetooth Low Energy to detect contacts and a custom rest client to interact with the backend.

Architectures and Programming of Processing Systems

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 us SIMD parallelism, which is exploited by using Intel SSE and AVX instruction sets, and Cache Blocking.

GPGPU Programming

Individual Project

CUDA C parallel implementation of the Merge operation. Algorithm's parallelization is based on the co-rank function. Obtained 66x speed-up with respect to the serial implementation by exploiting different GPU memory types.

Software Platforms for Web Applications

Individual Project

Implementation of ShopCart web application. The frontend consists in an Angular Single Page Application. For the backend, rest web services have been implemented using the JavaEE stack while JPA + Hibernate have been used for persistency. PostgreSQL has been used as OR-DBMS

Software Engineering

Individual Project

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