ELIA FANTINI

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PROFILE

I am fascinated by the use of big data to create further knowledge and revolutionary solutions to real-world problems. For this reason, I'm currently studying Data Science at EPFL. In my free time, I'm also passionate about Game Development and Music production.

EDUCATION

Master of Science, Data Science – EPFL, Swiss Federal Institute of Technology — Lausanne, Switzerland
10th in Computer Science and Information Systems (2022 QS World University Rankings) — 2021 - Present

Engineering of Computing Systems Bachelor's degree - Politecnico di Milano — Milan, Italy
13th in Engineering and Technology (2020 QS World University Rankings) — 2018 - 2021
GPA: 108/110. Merit Based Scholarship 2020, Best Freshmen Prize 2019, San Marino Merit Contribute 2019, 2020, 2021

San Marino's upper secondary school — Republic of San Marino
Liceo Scientifico (High school with a major in scientific subjects) Grade: 100 /100 with honours — 2013 – 2018

MAIN PROJECTS

(all projects are carefully explained in my portfolio website, link is on top)

Deep Learning project: two variations of Noise2Noise's CNN denoiser architecture, reimplementation of Pytorch's autograd and other modules from scratch.

Virtual Reality project: a VR escape-room videogame for Meta Quest, developed with Unity Engine. Game awarded as best game of the course (2021/2022).

Optimization for ML project: implementation and comparison of zero vs first order AdaMM optimizer: analysis of convergence rates and minima shape.

Artificial Neural Networks project: Q-Learning and Deep Q-Learning (reinforcement learning) to train artificial agents that can play the famous game of Nim.

Data analysis: two data analysis to practice Pandas, Data Wrangling and Vizualization, Regression, Observational Studies, Statistics and Supervised Learning.

Applied Data Analysis data story: a Quotebank data analysis to build a political party classifier based on quotes, with sentiment, grammatical and topic analysis.

Machine Learning projects: Higgs Boson classifier using CERN data, Road Segmentation with DeepLabV3+ CNN, with different pre/post processing techniques.

Math of data projects: a series of miniprojects that included first order and proximal methods convergence comparison, image reconstruction with proximal-methods on wavelets transform. AMSGrad and RMSProp comparison on image classification, a WGAN that learns the distribution of a MoG, Frank-Wolfe for blind image deconvolution, HCGM and VuCondat comparison on two problems using Semidefinite Programming.

Software Engineering final project: an online multiplayer board game coded in java, playable both on a javaFX GUI or on CLI. Features multiplayer disconnection, simultaneous game's matches, all saved if the server crashes.

Aerial photography simulation: python software with GUI, capable of simulating an aerial photo given a pair DEM-Orthophoto (in GeoTIFF format).

PoliMusic: two websites that lets the user upload his songs on a server, as Pure HTML (thin Client) and as Thymeleaf Rich Internet Application (thick Client).

ContrastEQ: design and implementation of a contrast equalizer's module for FPGAs using VHDL. Project for the course of Digital Logic Design.

edU: command prompt text editor in C with multiple Undo/Redo, highly time and memory efficient. Project for the course of Algorithms and Data Structures.

Stealth: personal project of a Command Line arcade game using C standard libraries only.

COURSEWORK

Machine Learning & Data Science: Deep Learning • Artificial Neural Networks • Optimization for ML • Computer Vision • Machine Learning • Applied Data Analysis • Math of Data • Distributed Information Systems (Data mining) • Statistics for Data Science • Probability and Statistics

Computer Science: Virtual Reality • Algorithms and Principles of Computer Science • Probability and Statistics • Bioinformatic Algorithms • Databases • Computer Architectures and Operating Systems • Fundamentals of Internet and Communication Networks • Fundamentals of Computer Science • Software Engineering

Engineering & Math: Analysis 1 & 2 • Linear Algebra • Physics • Circuit Theory • Digital Logic Design • Electronics • Industrial Automation

TECHNICAL SKILLS

• **Languages:** Python, C#, Java, JavaScript, SQL, HTML, CSS, C++, C++ for Arduino IDE, C • **Software:** Blender, Unity Real-Time Development Platform, Unreal Engine 5, Arduino IDE, Ableton Live, Premiere Pro, Photoshop, Suite Office • **Online Courses:** IBM's Introduction to AI (Coursera), Machine Learning Stanford's course (Coursera), Security Soft Start (OnStairs Academy), Startup 101 (Politecnico di Milano), Unity 3d (Udemy), Ethical Hacking (Udemy)

Others

Italian (Native) | **English** (8 IELTS Academic)

7 years amateur tennis player, 7 years self-taught guitarist, creator and owner of @art_doesnt_exist drawings' Instagram account.