

# ELIA FANTINI

elia.fantini99@gmail.com | linkedin.com/in/-eliafantini | eliafantini.github.io/Portfolio

## 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 love Game Development and Music production

## EDUCATION

**Master of Science, Data Science** - EPFL, Swiss Federal Institute of Technology Lausanne, Switzerland  
GPA: 5.23/6 September 2021 – Present

**Engineering of Computing Systems Bachelor's degree** - Politecnico di Milano Milan, Italy  
GPA: 108/110 September 2018 – July 2021

Merit Based Scholarship 2020 • Best Freshmen Prize 2019 • San Marino Merit Contribute 2019, 2020, 2021

## MAIN PROJECTS

(these and other projects are carefully explained in my portfolio website, link is on top)

**FastNRTF:** Python • 10x less time 4x less memory for relighting of complex scenes using Neural Radiance Transfer Fields • inverse neural rendering

**AI Denoiser:** Python • increased Noise2Noise CNN denoiser's convergence rate and performance by 20% on small images • reimplemented Pytorch's autograd framework and optimization modules from scratch

**VR Game:** C# • created a VR escape-room videogame for Meta Quest with Unity Engine • awarded as best game of the course

**3D Human Reconstruction:** Python • Robustness Analysis on 2D Priors for human mesh estimation from single mesh • CLIP supervision • multimodal

**ML Optimizers comparison:** Python • implemented zero and first order AdaMM optimizers • compared convergence rates and minima shape

**Deep reinforcement learning agents:** Python • developed Q-Learning and Deep Q-Learning agents that can play the famous game of Nim

**Data visualization website:** HTML, CSS, JS, Python • Market analysis of mobile apps with interactive plots • D3.js • Google Charts

**Data analysis:** Python • applied data wrangling, visualization, regression, observational studies, statistics and supervised learning on two mock cases

**Data story:** Python, CSS, HTML • built a political party classifier based on the 198GB Quotebank quotes' dataset, using sentiment, grammatical and topic analysis • wrote a web data story to illustrate findings

**Machine Learning projects:** Python • scored 12th/107 on AICrowd leaderboard with 0.91 F1 score developing a road segmentation classifier using different pre/post processing techniques • scored 50th/307 on leaderboard with 0.82 accuracy implementing a Higgs Boson classifier on CERN data

**Math of data projects:** Python • implemented and compared convergence of optimizers using several first order and proximal methods • image reconstruction with proximal-methods on wavelets transform • implemented and compared AMSGrad and RMSProp on image classification • developed a WGAN that learns the distribution of a MoG • developed Frank-Wolfe for blind image deconvolution • implemented and compared HCGM and VuCondat on problems using Semidefinite Programming

**Software Engineering project:** Java • developed an online multiplayer board game using MVC pattern • playable both on a javaFX GUI or on CLI • featured multiplayer disconnection and simultaneous game's matches, all saved if the server crashes • awarded as most intuitive GUI

**PoliMusic:** HTML, CSS, JavaScript • two websites to upload songs on a server • thin vs thick Client (Thymeleaf) • designed UX and UI

**edU:** C • developed a command prompt text editor in C with multiple Undo/Redo using complex data structures for high time and memory efficiency

## RELEVANT COURSEWORK

**Machine Learning & Data Science:** Deep Learning • Artificial Neural Networks • Optimization for ML • Computer Vision • Machine Learning • Applied Data Analysis • Visual Intelligence • Data Visualization • Math of Data • Distributed Information Systems • Statistics for Data Science • Databases

**Computer Science:** Virtual Reality • Software Engineering • Algorithms and Principles of Computer Science • Cybersecurity and Privacy • Bioinformatic Algorithms • Computer Architectures and OS • Fundamentals of Internet and Communication Networks • Fundamentals of Computer Science

## SKILLS

**Languages:** Python • Java • C# • C • JavaScript • SQL • HTML • CSS • C++ • VHDL

**Machine Learning & Data Science:** PyTorch • OpenCV • Tensorflow • Data interpretation (Scikit-learn) • Data wrangling (Pandas, Numpy) • Data visualization (Matplotlib, Seaborn) • Data mining

**Miscellaneous Technologies:** Unity Engine • Unreal Engine • Blender • Ableton Live • Premiere Pro • Photoshop

## OTHERS

**Italian** (Native) | **English** (C1 – 8 IELTS Academic)

7 years amateur tennis player • 8 years self-taught guitarist • creator of @art\_doesnt\_exist drawings' Instagram account