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 love Game Development and Music production

EDUCATION

Master of Science, Data Science - EPFL, Swiss Federal Institute of Technology — Lausanne, Switzerland
GPA: 5.2/6 — 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

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

FastNRTF: Python • efficient 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

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

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 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

Aerial photography simulation: Python • reduced by 100% the time to design drone flights by developing GUI software to simulate an aerial photo given a pair DEM-Orthophoto (in GeoTIFF format)

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 • 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 • C# • Java • 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 • 7 years self-taught guitarist • creator of @art_doesnt_exist drawings' Instagram account