ELIA FANTINI

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PROFILE

I am fascinated by the use of big data to generate new insights and revolutionary solutions to real-world problems. In my free time, I explore music production and develop personal projects and software ideas, always experimenting with the latest AI technology.

EDUCATION

Master of Science, Data Science - EPFL, Swiss Federal Institute of Technology — Lausanne, Switzerland
GPA: 5.42/6 — September 2021 – March 2024

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

EXPERIENCE

AI Engineer – Play Suisse, SRG SSR — Geneva, Switzerland
Designing, implementing, and optimizing cutting-edge AI solutions (R&D) — March 2024 – Present

Master Thesis Student - Play Suisse, SRG SSR — Geneva, Switzerland
Supervised by Prof. Dr. Sabine Süsstrunk and Dr. Gabriel Autès — September 2023 – March 2024
PICTO: Automating Video Thumbnails Selection and Generation with Multimodal and Multistage Analysis
AI pipeline • user-frendly web app • 3.57x more candidates, faster workflow • + 7% user preference over manual selection and + 29% over previous method • >10x pre-release speed up • expanded usage from small team of designers to all company's business units • Includes: emotions/closed eyes/shot scales/faces detection, face identification, auto-cropping, semantic matching, aesthetic estimation, redundancy reduction, image generation

Research Student – Image and Visual Representation Lab, EPFL — Lausanne, Switzerland
FastNRTF: Efficient Relighting of Complex Scenes using Neural Radiance Transfer Fields — September 2022 – February 2023
Python • 10x less time 4x less memory for relighting with NRTF • inverse neural rendering

PROJECTS

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

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

PUBLICATIONS

Automating Video Thumbnails Selection and Generation with Multimodal and Multistage Analysis. Elia Fantini ArXiv, 2024

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

HONORS & AWARDS

Merit Based Scholarship - Politecnico di Milano 2020
Best Freshmen Prize - Politecnico di Milano 2019
San Marino Merit Contribute - Republic of San Marino 2019, 2020, 2021

LANGUAGES & SKILLS

Languages: Italian (Native) | English (C1 – 8 IELTS Academic)

Programming 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: Azure • Azure AI • Docker • Git • LATEX • Unity Engine • Unreal Engine • Blender • Ableton Live • Premiere Pro • Photoshop

EXTRACURRICULAR ACTIVITIES

7 years amateur tennis player • 8 years self-taught guitarist • creator of @art_doesnt_exist drawings' Instagram account