ELIA FANTINI

elia.fantini@alumni.epfl.ch | linkedin.com/in/-elia-fantini | eliafantini.github.io/Portfolio

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: metadata extraction, 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)

MuseMind: AI Voice Chatbot app • your personal AI tour guide • real-time, interactive explanations • STT, TTS, LLM Agent, Advanced RAG

AI Agents automations: n8n to orchestrate automations with LLM agents on my daily workflows

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