



Rayan DAOD NATHOO

Machine Learning Engineer

Experienced Machine Learning Engineer aiming to **develop solutions for real-world constrained problems**. I helped companies like **Bose** and **Logitech** innovate using novel technologies and acquired vital research and industry skills on the way. With experience in **Audio ML**, **Computer Vision**, **NLP**, **Model Compression**, and more, I am a team worker eager to learn and looking forward to the next challenge! Currently looking for impactful & ethical projects in AI/ML.

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📍 French citizen, based in Lausanne, Switzerland

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TECHNICAL SKILLS



WORK EXPERIENCE

Machine Learning Engineer

Bose [↗](#)

02/2023 - 08/2023

American company, multinational manufacturer of audio equipment for entertainment, home, ... (7k+ employees)

Internship - Boston, MA, USA (remote)

Achievements

- Designed & improved product-level **Deep Learning** models such as **Speech Enhancement** (SE) and **Source Separation** (on-device), using CNN-RNN-based encoder-decoders (U-Net-like, DCCRN, TCN, ...). Performed data analysis, feature extraction, and developed an **objective evaluation pipeline**.
- Explored **Model Compression** (Knowledge Distillation (KD), Quantization, Pruning) and implemented a general purpose **KD framework**
- Developed a **novel KD method** for SE models, particularly good in adverse conditions: [paper under review for ICASSP 2024](#)
- Collaborated with ML Engineers in 2+ projects and **improved our codebase** (new model capabilities, enhanced training script, Tensorboard plugins, ...)

Computer Vision Engineer

Multimedia Signal Processing Group, EPFL [↗](#)

05/2022 - 08/2022

Swiss University laboratory specialised in multimedia signal processing (~10 members)

Fixed-term contract - Lausanne, Switzerland

Achievements

- Evaluated existing **Semantic Segmentation** (CNN) and **Super-Resolution** (GAN) methods with latency and hardware constraints
- Deployed models in a real-time TV studio pipeline (Norway, UK, ...) - [Code](#), [Publication](#), [Reports](#) - project validated by the European Commission

Machine Learning Intern

Logitech [↗](#)

08/2021 - 03/2022

Swiss company, multinational manufacturer of computer peripherals and software (8k+ employees)

Internship - Lausanne, Switzerland

Achievements

- Developed real-time **Deep Learning Target Source Separation** models: **1/** footstep extractor for gaming **2/** sound type manipulator (41 classes)
- Developed an **end-to-end pipeline**: data ingestion-processing-augmentation, models (CNN, RNN), evaluation, hyper-parameter tuning, prototyping
- Demonstrated **prototypes** to the entire R&D department, UX Designers, Product Managers. Wrote and defended my [Master's Thesis](#)

EDUCATION

BSc & MSc in Computer and Communication Sciences

Swiss Federal Institute of Technology Lausanne (EPFL)

2015 - 2022

Lausanne, Switzerland

Software Engineering, Machine Learning & Signal Processing (GPA 5.1/6)

- [Master Diploma supplement](#) Machine Learning, Deep Learning, Image Processing, Audio and Speech Processing, Biomedical Signal Processing, Advanced Algorithms, Advanced Probabilities, TCP/IP, Mobile Networks, Information Security & Privacy, Modern Digital Communication, ...
- [Master's Thesis: "Personalised Audio Enhancement"](#) (with Logitech & LCAV EPFL)
- Semester Project: [Percussion Sample Classifier](#) - Data Engineering & Analysis, Feature Extraction, Time-Frequency Analysis, Random Forest, CNN
- More projects: [Twitter Sentiment Classification](#), [Multi-Channel Noise Reduction](#), [Direction Of Arrival Estimation](#), JUCE VST Plugin (C++ app), ...
- Activities: Master students representative, Event Manager -> Sponsoring Manager -> President of the CS Student Association

CERTIFICATES

Coursera - TensorFlow Advanced Techniques (2023)

Custom Layers, Custom Loss Functions, Custom and Distributed Training, Advanced Computer Vision, Generative Deep Learning (4 courses - 80 hours in total)

Coursera - TensorFlow Developer Specialization (2022)

Convolutional Neural Networks, Natural Language Processing, Sequences, Time Series prediction (4 courses - 80 hours in total)

Coursera - Deep Learning Specialization (2022)

Neural Networks, Deep Learning, Hyper-parameter tuning, Regularization, Optimization, Convolutional Neural Networks, Sequence models (5 courses - 120 hours in total)

PERSONAL PROJECTS

Spoteezer

- ◇ Spotify-Deezer music link converter (Flask, HTML, CSS) helping share music no matter the platform. [Try it now!](#)

ForumEPFL-Search

- ◇ Enhanced search tool for the EPFL Forum job fair website using web scraping and LLM prompting (Python, BeautifulSoup, GPT 3.5 Turbo)

REFERENCES

Dr. Mikolaj Kegler - Audio ML Scientist @ Bose

"[...] can very quickly get a solid grasp of new concepts and clearly explain the key ideas to his coworkers. [...] performed an in-depth analysis of existing solutions, identified their limitations, and built on top of them to design significantly more powerful methods."

[Reference letter](#) : upon request

Dr. Milos Cernak - Principal Engineer @ Logitech

"[...] hard worker, systematic and logical [...] produces reproducible and well-documented code [...] cares deeply about the whole chain of turning users experience into products"

[Reference letter](#) : upon request

VOLUNTEERING & STUDENT JOBS

CLIC Executive Committee

Computer Science Student Association

2018 - 2021

[Roles](#)

- ◇ **President** (20 - 21) - Management (12 members + 5 commissions, CHF 90k+ annual budget), decision-making, internal/external representation
- ◇ **Sponsoring** (19 - 20) - Canvassing, contract negotiations (brought CHF 5k+), contact with sponsors (big/small Swiss/international companies)
- ◇ **Events** (18 - 19) - Organisation of 10+ events, logistics & inventories, team supervision (15+ staff members)

Social Network Content Creator & Manager

EPFL IC School

2020 - 2022

[Achievements](#)

- ◇ Managed the EPFL Computer Science School social networks (Instagram, Twitter, LinkedIn, Facebook)
- ◇ Launched and improved recurring concepts (IC Takeover, IC Connects, News, ...)

Student Assistant

Discrete Mathematics course

2018 - 2020

[Achievements](#)

- ◇ Support for students during the course "Advanced Information, Computation, Communication I"


LANGUAGES


French
Native


English
Full Professional Proficiency (C2)


Spanish
Elementary Proficiency (A2)

HOBBIES

 Music Production - played piano for 10y, produce electronic music for 5y now (Ableton Live)

 AI/tech advances - stay up-to-date by reading articles, listening to podcasts, watching videos

 Self-improvement - read and learn about personal growth and try my best to apply recurring rules in life and work

 Travelling - Lived in Europe and West Africa, family across all continents, love discovering new places and new cultures