

# Farid Abdalla

🌐 [kurokabe.github.io](https://kurokabe.github.io) | 🌐 [Kurokabe](#) | [in](#) [farid-abdalla](#)  
🏠 2502 Biel/Bienne, Switzerland | 📅 20.03.1996

## Work Experience

### Software Engineer – ML & Generative AI

ORamaVR

09/2023 – Present Geneva, Switzerland

- Developed and deployed multi-modal LLM pipelines for text-to-3D generation using PyTorch, Hugging Face, and Nvidia NeMo.
- Architected a scalable dataset infrastructure supporting 3D model storage and captioning, reducing retrieval latency by 25%.
- Integrated OpenAI APIs and Vespa vector DB for semantic 3D mesh search using CLIP/SBERT embeddings.
- Drove model evaluation and hyperparameter tuning via Weights & Biases across Azure-based cloud infrastructure.

### Software Engineer – Research Assistant (AI & RL)

HE-Arc – University of Applied Sciences

09/2020 – 09/2023 Neuchâtel, Switzerland

- Delivered ML solutions across 6+ domains (finance, industry, aerospace) with consistent on-time deployment.
- Authored a conference paper on task scheduling through reinforcement learning optimization published at IEEE PIMRC 2021.
- Collaborated with cross-functional teams and mentored junior assistants on data preprocessing and modeling practices

## Education

### Master's Thesis

Osaka Metropolitan University

04/2022 – 09/2022 Osaka, Japan

Grade: **6.0/6.0**

### M.Sc. in Data Science

HES-SO Master – University of Applied Sciences

09/2019 – 08/2020 Lausanne, Switzerland

GPA: **5.5/6.0**

### B.Sc. in Computer Science – Software Development

HE-Arc – University of Applied Sciences

09/2016 – 08/2019 Neuchâtel, Switzerland

GPA: **5.6/6.0** (award for best GPA)

## Certificates

### Deep Reinforcement Learning Course

HuggingFace

March 2023

Grade: **Excellent**

### Winter School in Data Analytics and Machine Learning

University of Fribourg

Spring 2021

GPA: **5.6/6.0**

# Software Engineer

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## Summary

Software Engineer specializing in Generative AI, ML infrastructure, and 3D data systems. Experienced in LLMs, reinforcement learning, and scalable pipelines. Proven ability to build, deploy, and optimize AI solutions across academic and industry settings using modern toolchains.

## General Skills

Software Engineering Machine Learning  
Deep Learning LLM Generative AI  
NLP Data Analysis Data Visualization  
Computer Vision Reinforcement Learning  
Data Structures Distributed Computing  
Algorithms Embedding Retrieval

## Technical skills

### Machine Learning and AI:

PyTorch, Hugging Face Transformers, Nvidia NeMo, Scikit-Learn, Weights & Biases, Pandas, NumPy, Matplotlib, Jupyter Notebooks, PyVespa, FastAPI

### Software Engineering:

Git, Software design patterns, APIs, Unit testing, Code review processes, CI/CD, Algorithms and Data Structures

### Software and Tools:

Docker, Kubernetes, Cloud Computing (Azure, AWS), Unity, Blender, DVC, Office

### Programming Languages:

Python, C++ (CUDA, Qt), C#, SQL, LaTeX

## Languages

French Native  
English Cambridge First Level C1  
Japanese JLPT N2 (B2-C1)  
German B1

## Interests

Escape Games Anime & Manga Artificial Intelligence Weightlifting

# Projects

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## Mugiwara – Multi-modal 3D mesh generation & NeMo integration

- Refined and extended the MeshGPT framework for transformer-based 3D mesh generation, integrating it into Hugging Face and Nvidia NeMo to support text and image conditioned mesh generation and editing.
- Orchestrated scalable multi-model training on Azure, applying systematic experiment tracking with Weights & Biases, leading to improved model reproducibility and tuning efficiency.

**Technologies:** Python, PyTorch, PyTorch-Lightning, Weights and Biases, Nvidia NeMo, HuggingFace, Docker, Azure

## OVR-Datasets – 3D Dataset Infrastructure & Mesh Captioning

- Designed a robust pipeline to pre-process and convert 3D meshes to USD format, enabling smooth uploading and reuse on Hugging Face datasets across generative model training workflows.
- Implemented render-based visual analysis to generate mesh captions using models like LLaVA and Gemma 3, increasing dataset descriptiveness for training multi-modal models.

**Technologies:** Python, PyTorch, Kaolin, HuggingFace, Docker, Meta-Flow, Ollama, Blender

## Shenlong – Scene Generation with Vector Retrieval

- Built a retrieval-augmented generation system by combining OpenAI APIs with a Vespa-powered vector database, enabling high-precision 3D mesh retrieval via CLIP and SBERT embeddings.
- Developed scene export features in USD format, enabling seamless pipeline integration with Unity and Blender for real-time rendering and simulation use cases.

**Technologies:** Python, OpenAI API, PyVespa, CLIP, SBERT

## GANime – Video Generation via GAN + GPT

- Developed a frame-by-frame video generation model for anime sequences as part of a Master's Thesis, achieving 85% similarity to ground truth sequences.
- Combined a VQ-GAN for high-fidelity image generation with a GPT-2 Transformer for frame prediction; fully reimplemented in PyTorch for deployment flexibility and reproducibility.

**Technologies:** Python, TensorFlow, PyTorch, PyTorch-Lightning, HuggingFace, Docker

## SOON-RL – Reinforcement Learning for Production Scheduling

- Engineered a multi-agent RL system to optimize workshop task scheduling and equipment reliability, published at IEEE PIMRC 2021.
- Transitioned from Unity ML-Agents (C#) to Ray RLlib (Python), improving model scalability; optimized reward functions and hyperparameters to reduce production cycle time by 20%.

**Technologies:** C#, Unity ML-Agents, Python, Stable Baselines, Ray RLlib, Ray Tune, SimPy

## DL4Space – Explainable AI for Satellite Anomaly Detection

- Delivered a deep learning-based diagnostic prototype for the European Space Agency, achieving a 15% improvement in anomaly detection efficiency versus traditional methods.
- Applied Explainable AI (LIME) to trace model decisions; developed an end-to-end pipeline covering preprocessing, training, and deployment with full documentation for handoff.

**Technologies:** Python, PyTorch, PyTorch-Lightning, Scikit-Learn, Docker, LIME, SQL

## Estigrappe3D – Grape Volume Estimation with Depth Maps

- Collaborated with Changins Viticulture Institute to develop a computer vision model estimating grape cluster volume and weight from images with depth data.
- Validated and enhanced existing models by extracting point cloud features from depth maps, improving measurement accuracy in agricultural phenotyping workflows.

**Technologies:** Python, PyTorch, PyTorch-Lightning, Scikit-Learn, Docker