Aurelien Peden

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Skills

Programming languages: Python, C/C++, SQL, R, HTML/CSS, JavaScript, Bash
Libraries and frameworks: PyTorch, TensorFlow, Transformers, FastAPI, Flask, scikit-learn, LangChain, Qdrant, ChromaDB, Redis, NumPy, pandas, Matplotlib, Seaborn, XGBoost, OpenCV, Hugging Face, NLTK, spaCy, pytest, requests
Tools: Git, Linux, Docker, GCP, Jupyter, CI/CD
Others: RGPD, MLOps

Experience

Research Engineer NLP (CDD), Inria CEDAR Team – Saclay/École Polytechnique, France — Feb 2025 – Ongoing

- Development of a fact-checking app for journalists with a **semantic search engine** to search statistical facts over a **vector database**, and maintenance of the existing codebase and deployment pipeline.
- **Research** on table dataset extraction from unstructured Excel file with **Transformers** and **Vision Transformers**.

Projects and Machine Learning courses – Paris, France — Oct 2023 – Jan 2025

Machine Learning Research Engineer Intern, Owkin – Paris, France — Mar 2023 – Sept 2023

- Researched and implemented visualization techniques in **Python** and **PyTorch** to analyze neuron-level features in a cancer diagnosis model, **enhancing interpretability and diagnostic accuracy by 10%**.
- Contributed to the development of a Swift-based deep learning library optimized for Apple Silicon **GPUs** and **neural networks interpretability**, implementing layers, **low-level GPU operations**, and gradient checking using the Metal API.
- Designed, trained, and evaluated architectures such as **Vision Transformers**, ensuring robust and maintainable code through **Git** collaboration and software engineering best practices.

Data Scientist Intern, Natixis – Charenton-le-Pont, France — Apr 2021 – Aug 2021

- Deployed the model via a **REST API** with **Python** and **Flask-RESTful**, implemented **unit tests** with **pytest**, and monitored model performance using **TensorBoard**
- **Designed** and **fine-tuned** a face mask classification model on a **synthetic dataset** using a pre-trained and modified **MobileNetV3** architecture, with **Python** and **TensorFlow**, achieving **98% accuracy** on real world data
- Implemented a **lightweight face detection algorithm** for videos using Haar Cascades and **OpenCV** for efficient **server-side processing** with limited computational power, **significantly reducing** the face detection time
- **Delivered a Docker containerized proof-of-concept** integrated into Natixis' AI showroom, enabling frontend teams to showcase AI capabilities and **wrote technical documentations** for further developments

Projects

3D Graphics Engine — github.com/aurelien-peden/Python-OpenGL-Graphics-Engine

- **3D Graphics** Engine developed using **Python**, **OpenGL** and ModernGL, featuring 3D Objects loading and translation, texturing, Phong lighting, gamma correction, camera controls and GLSL shaders for efficient lighting computations

Chat with your dataset — github.com/aurelien-peden/Chat-with-your-dataset

- Development of a Streamlit **web app** that leverage **LLMs** to upload multiple CSV datasets and interact with them through a **chatbot**, allowing the users to perform **data analysis** and generate **data visualizations**

Snake Deep-Q Learning Agent — github.com/aurelien-peden/Snake-Deep-Q-Learning-TensorFlow

- Development of a Snake game environment using **Python** and PyGame
- Implementation and training of a Deep-Q **reinforcement learning** agent with **Python** and **TensorFlow**

Education

Paris-Saclay University – MS in Artificial Intelligence — Sept 2023
ENSIIE – MS in Software Engineering — Sept 2023
IUT Fontainebleau – DUT in Computer Science — June 2020