

Clément Detry

MACHINE LEARNING ENGINEER

📞 +33 768 71 74 62 | ✉ clementdetry@outlook.com | 🏠 clem2507.github.io | 📄 clementdetry | 📍 Belgium

Summary

AI enthusiast with a BSc in Artificial Intelligence from Maastricht University and an MSc in Machine Learning from Université de Montréal and Mila Research Institute. I am currently serving as an ML Engineer at HumanWare Technologies, where I advance vision algorithms to aid the visually impaired. I am driven by the AI for Good initiative, aiming to leverage technology to create positive societal impacts. I am particularly interested in finding opportunities that allow me to apply and further develop my expertise in natural language processing (NLP) projects.

Work Experience

HumanWare Technologies

Montréal, CA

ML Engineer

May 2023 - Present

- Led the development of an object detection system for visually impaired users, utilizing a GPS-equipped device with dual cameras to enhance user independence.
- Engineered a lightweight PyTorch model using few-shot learning, optimized for high accuracy and local processing on embedded devices.
- Achieved a 0.344 mAP@0.5:0.95 using 5-shot learning for diverse object shapes on an OOD dataset.
- Developing a user-friendly image capture system using PySOT's SiamRPN tracking algorithm, enabling autonomous data collection adapted to visually impaired users.

Nomics Care

Liège, BE

Data Scientist

Sept 2021 - Jun 2022

- Employed machine learning models, including 1-D CNNs and LSTMs, for classifying specific patterns in time series for sleep apnea diagnosis, notably enhancing the accuracy from an F1 score of 0.7 to 0.98.
- Managed large, non-structured time-series datasets, developing a robust preprocessing pipeline using the MNE-Python library and Pandas for data cleaning and structuring, along with SMOTE for data balancing.
- Migrated the model to AWS, enabling server-based inference processing to support real-time data analysis in the application.
- This optimized diagnostic process now reduces the time required for doctors to analyze each new patient by 50%.

Nomics Care

Liège, BE

Web Developer Intern

Jun 2021 - Aug 2021

- Initiated the migration of a Windows based app used by doctors for sleep signal analysis to a Django web server app, enabling access to patient analysis platforms from any device.
- Developed the backend for user authentication and password management systems, and established an SQL database for storing user data.

Projects

Medical Image Segmentation ([link](#))

Montréal, CA

Université de Montréal

Jan 2023 - May 2023

- Worked within a three-person team on a project aimed at 3D medical image segmentation, utilizing CT and MRI scans. The objective was to assess and refine the architectural framework of a U-Net model to enhance its segmentation performance.
- Implemented a series of strategic modifications to the U-Net model, including adjustments to the convolutional block, improvements in skip connections and the integration of a cross-attention mechanism. At the same time, established a standardized data preprocessing and augmentation pipeline, ensuring consistent and accurate evaluation of architectural changes across model iterations.
- Improved medical image segmentation by adding convolutional layers to shortcut paths, achieving the best overall performance with an average rank of 1.59 across various datasets.

Interactive Human vs Robot “Water Pong” Game ([link](#))

Maastricht, NL

Maastricht University

Sept 2021 - Jan 2022

- Collaborated in a team of four to create an interactive “Water Pong” game featuring real-time computer vision. Utilized Hough Circle Transform in OpenCV for precise cup detection and YOLOv5 for ball tracking, enabling accurate distance measurements.
- Engineered a lookup table for the robotic arm's throw parameters, correlating with cup positions to achieve a target hitting accuracy of 90%.

Education

Université de Montréal & Mila - Quebec AI Institute

Montréal, CA

MSc in Machine Learning

Sept 2022 - Jan 2024

- **CGPA:** 3.98/4.3
- **Courses:** Data Science, Machine Learning, NLP, Representation Learning (by Prof. Aaron Courville)

Maastricht University

Maastricht, NL

BSc in Data Science and Artificial Intelligence

Sept 2018 - Jan 2022

- **CGPA:** 7.23/10
- **Thesis:** Identifying Patterns in Jaw Activities: Time Series Analysis of Sleep-Related Data ([link](#))
- **Supervisor:** Prof. Rachel Cavill

Skills

Programming Python (advanced), Java (advanced), Matlab (intermediate), SQL (intermediate), C++ (beginner)

Libraries PyTorch (advanced), Scikit-learn (advanced), Pandas (advanced), Numpy (advanced)

Other Tools Git (advanced), LaTeX (advanced), Docker (intermediate)

Languages

French Native

English Fluent

Dutch Intermediate