Mateusz Grzybowski

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PROFILE

Recent Machine Learning graduate with nearly a year of industrial experience in building efficient data-driven solutions with Python and Pytorch. Experienced in building various end-to-end software projects such as API for prompt-based car frame search with AWS and Python, robot lecturer utilising deep learning to teach elementary-level science and ETL data pipeline.

EDUCATION

Imperial College London, London, UK — Oct 2022 - Oct 2023
MSc Applied Machine Learning — Grade: Distinction

- **Thesis:** Scene Representation and Pre-Tagging for Autonomous Driving (80% mark) - a research on the application of self-supervised methods on autonomous vehicle data (nuScenes) for improving performance on 3D object detection. Currently working towards publishing a scientific paper out of the obtained results.

University of Sheffield, Sheffield, UK — Sep 2019 - Jul 2022
BEng Biomedical Engineering — Grade: 1st Class Honours

EXPERIENCE

Fusionride — London, UK
Machine Learning Intern — Jun 2023 - Oct 2023

- Established an API for autonomous driving data selection and tagging based on a multi-modal foundation model on **AWS EC2** instance using object-oriented programming in **Python** and its libraries such as **Pytorch** and **Pandas**.
- Boosted the speed by 85% of tagging of self-driving vehicle data by applying GPU computation and feature caching.
- Tested the effectiveness of the API under different setups with **Docker** containers.

Insigneo Institute — Sheffield, UK
Deep Learning Research Intern — Jun 2022 – Aug 2022

- Coded a branched deep learning model for segmentation and classification of jaw lesions based on radiography data with **Pytorch** and **OpenCV**.
- Accelerated the computation of the model through **parallel computation** on multiple GPUs on a **HPC Linux** server leading to 54% lower latency.
- Produced highly accurate mask predictions of up to 91% intersection-over-union (IoU) value.

PROJECTS

ETL Pipeline — London, UK
Project Link: `TBA` — Feb 2023 - Mar 2023

- Implemented a data infrastructure to process and store relational databases built from tabular and graph data on **AWS**.
- The pipeline consisted of temporary data holder on **S3** bucket, **AWS Lambda** serving as an **ETL** to extract, preprocess and load raw data to **AWS RDS MySQL** server.
- Automatised the pipeline with **Python** and Lambda trigger set to track a temporary **data lake** and respond whenever a data file of a target format is uploaded. This would allow SQL analysts to query the RDS while getting data tables updated.

RoboLecturer — London, UK
Project Link: `https://github.com/RoboLecturer/RoboLecturer-Code` — Jan 2023 - Apr 2023

- Led a sub-team of 5 people responsible for the computer vision module of the robot.
- Implemented a pre-trained 2D deep learning object detector for face detection of people distances up to 20 meters.
- Additionally, the robotic system consisted of integrated ChatGPT for answer and slide generation, TTS API for speech-to-text inference, a web server for posting generated slides and quizzes, and robot kinematics programmed with **ROS**.
- Conducted a small 20-minute lecture for a small audience. According to our survey, the attendees claimed that the lecture with the robot was more engaging than the pre-recorded video with the same content.

Smart Echolocator — London, UK
Project Link: `https://github.com/shreya-51/MScAML_group_project` — Oct 2022 - Apr 2023

- Developed a device that predicts the orientation and classifies a room that is inside with machine learning methods based only on audio data with approximately 0.5-meter error and 98% accuracy for the corresponding tasks.
- Engineered time and frequency domain features to get more insights about the data to train more accurate models in **TensorFlow Lite**.
- Collected data with a manufactured hardware casing and software written in **C/C++** on Arduino 33 BLE Sense board.

Sheffield Engineering Leadership Academy — Sheffield, UK
Member of Cohort 2020 — May 2020 - June 2022

- Developed strong communication and presentation skills throughout the series of workshops conducted by industrial professionals.
- Improved leadership skills through a project addressing the development of methods to accelerate NHS net-zero transition in South Yorkshire and Bassetlaw region.
- Cooperated within an interdisciplinary environment, gaining a wider perspective on problem-solving and project management.