Tomasz Twardoch

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Education

University Of Cambridge | MEng in Information and Computer Engineering | 2020-2024
- Specialised in **Machine Learning**, **Information Theory** and **Computer Systems**
- Graduated *summa cum laude* (Honours with Distinction) obtaining *1st class* honours in all years
- Represented the university at Varsity Duathlon and Varsity Cross-Country Race

Experience

Nokia Bell Labs | Stochastic Channel Modelling And Estimation for 5G NTN | Jun 2023 - Jun 2024
- Industrial **Master's** project on **5G** satellite communications with focus on channel estimation.
- Implemented a channel model between a satellite and a ground receiver in **Python** and **MATLAB.**
- Developed a method of compensation for the effects of the channel using **autocovariance**.
- Integrated the findings into the **5G** simulation resulting in a publication for the **3GPP.**

Intel Corporation | Software Development Intern | Jul 2022 – Sep 2022
- Successfully implemented a **Proof of Concept** for automatic collection and validation of firmware control signals by allowing to read buffers from a proprietary tool directly in **Python**.
- Worked in an **Agile** team and cooperated with various teams overseas both **onsite** and **remote**.

Projects

Deep Convolutional Generative Adversarial Networks in PyTorch [DEMO]
- Created and trained a custom **DCGAN** model on **MNIST** dataset to generate images of numbers.
- Optimised the number and size of layers in both the **Generator** and the **Discriminator**.
- On top of **Generator**, and **Discriminator,** I added a **Classifier** which allowed to choose the number.

Brain tumours detection using Deep Learning in PyTorch [LINK]
- Obtained data from **Brain MRI Images for Brain Tumor Detection Dataset** and used data augmentation to create training and validation datasets due to limited amount of images.
- Fine-tuned and compared 6 models: **AlexNet**, **VGG**, **ResNet50**, **EfficientNet**, **MobileNetV3**, and **ViT**.
- Compared models to achieve **98%** accuracy using a **Vision Transformer** with a modified head.

Portfolio website and API hosting on AWS EC2 [LINK]
- Hosted a portfolio website based on **Django**, **nginx**, and **Gunicorn** with **auto-scaling**.
- Website utilised a **DynamoDB** Database through **REST API** and **AWS Lambdas** to store data**.**
- Set permissions to avoid unauthorised access to the machine or any of its ports (except 80 and 443).

Courses & Certifications

PyTorch For Deep Learning | Jun 2024 - Sep 2024 | Udemy
Introduction to Cloud Computing on AWS | Sep 2024 | Udemy
The Complete SQL Bootcamp | Sep 2024 | Udemy
Product Assurance and Security Yellow Belt – Software | 2022 | Intel

Skills

Programming languages: Python, C, C++, MATLAB, SQL (PostgreSQL), VHDL, Verilog
Frontend: HTML, CSS, JavaScript
Backend: nginx, Gunicorn, Django, REST API
Operating systems: Windows, Linux
Tools: Git, GitHub, CI/CD, OOP, unit testing, Docker, Kubernetes, WSL, AWS, OpenGL, Conda, Django
Libraries: PyTorch, PyTest, NumPy, SciPy, Pandas, Scikit, matplotlib, Tensorboard and more
Languages: English(fluent, C2), German(Intermediate, B2, currently learning), Polish(fluent, C2)