Benjamin Sanati

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EDUCATION

University of Southampton
Date of Completion: June 2023

MEng Electronic Engineering with Artificial Intelligence
Current Average: First (80% Average)

Impactful Modules: Foundations of ML, Advanced ML, Computational Finance
Differentiable Programming and Deep Learning, Data Mining
Advanced Computer Architecture, Optimisation, Numerical Methods

Hills Road Sixth Form College
Date of Completion: June 2019

A Levels: *Maths, Physics, Chemistry*

PROJECT EXPERIENCE

Masters Group Design Project
October 2022 - January 2023

University Project

- Worked on a collaborative project with 4 other members for an industry client
- Advised the team on the creation of a custom image dataset that was obtained at a train depot
- Trained state-of-the-art *object detector* (YOLOv7) and *image classification* (BEiT) models on the custom dataset
- Automated the creation of a damaged sign dataset for an image classification model
- Designed and implemented a custom *video object-tracking* algorithm
- Integrated the machine learning workflow with the server infrastructure to produce an efficient final system ready for testing
- Presented project to academic supervisors and other members of the cohort

UG Research Project Intern
June 2022 - September 2022

University of Southampton

- Gained an extensive amount of experience using object detection models and the attention mechanism
- Created *Vision Transformer* (ViT) models using the *PyTorch* framework for the multiple object tracking task
- Fine-Tuned a pre-trained ViTDet object detection model on the MOT17 dataset
- Implemented an efficient video handling module with sparse temporal sampling
- Presented a summary of the project findings to both students and academics

Year 3 Individual Project
September 2021 - May 2022

University Project

- Investigated the accuracy-specificity trade-off of early-exiting *dynamic DNNs*
- Designed a novel CNN architecture that provides adaptable classifications in granularity during inference, which subsequently improved classification flexibility and hierarchical representation power at run-time
- Performed a thorough analysis of the model in comparison to other similar models and presented findings in a paper
- Presented the project findings to two academics in the project viva

AI Hackathon
February 2022

Hosted by Cirium

- Spearheaded a team of 3 members to create a solution that earned us a joint 3rd place finish
- Developed data analytical techniques to process data about organized events and online flight query volumes allowing us to determine and identify the events that lead to a spike in flight requirements
- Trained an autoencoder neural network to locate the anomalies in flight query volumes
- Presented our solution to a panel of judges, the majority of which were representatives from Cirium

Year 2 Design Project
February 2021 - April 2021

University Project

- Led a successful group project (9 members) that addressed the issues of employee mental and physical wellbeing during lockdown by encouraging physical activity during the remote working period
- Acted as a mediator, contingency planner, manager and organizer, promoting all team member's proactive collaboration to ensure a high standard of project completion
- Created a direct remote connection between all users and the website by setting up an MQTT communication server on AWS
- Integrated the server, website and embedded devices allowing data to be processed from the user and displayed on the website
- Presented our final solution as a team

ADDITIONAL INFORMATION

Skills: Python, C++, Linux, PyTorch, NumPy, LaTeX, Slurm Workload Manager
Soft Skills: Teamworking, Creative Problem Solving, Project Management
GitHub: https://github.com/ben-sanati
LinkedIn: https://www.linkedin.com/in/benjamin-sanati/
Udacity Courses: Structuring ML Projects, NNs and DL, CNNs, Improving DNNs
Interests: Football, Basketball, Cinema, Pool, Reading
Referees:

- Academic - Professor Geoff Merritt 023 8059 2775 gvm@ecs.soton.ac.uk
- Personal - Iain Monaghan 07808283335 iain.monaghan0@gmail.com