Tom Pollak

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EDUCATION

University of York 2023
BEng. Computer Science – Weighted average: 77%

Lady Manners School 2020
A-Level – Further Maths (A), Maths (A), Computer Science (A), Physics (A)

EXPERIENCE

Cisco Meraki June - August 2022
Full Stack Software Engineer Intern – Camera Intelligence Division *London, UK*

- During my internship, I designed and implemented a deep learning model and pipeline proof of concept which allows users to search for *anything* in a video feed – a useful feature for the "Smart" Cisco Meraki CCTV cameras.
- For example, "A man wearing a chequered shirt and a backpack riding a bike"
- Used an *OpenAI CLIP* derivative to produce embeddings to index using *Spotify's Annoy library*.
- Extended the current on-camera motion detection pipeline to feed image "blobs" into the new model.
- Implemented in C++, using PyTorch and NCNN deep learning frameworks.
- A large challenge was the memory constraints of the edge devices – the model could not be larger than 80MB. To address this I split the model between the camera and the server, all image processing and indexing is done on camera, with the server creating the text embedding from a user query.
- Once indexed, a busy 30 minute video could be queried in 0.2 seconds, with a total of 20MB index size.
- Attribute search was a hot request for many customers, most notably a for sale in all Starbucks restaurants.
- Project Reference

PROJECTS

Automated Horse Betting Software December 2020 - July 2021
https://github.com/tom-pollak/each-way-matcher

- Discovers undervalued horses by the bookmaker in each-way betting.
- Uses a strategy that the bookmaker calculates the odds of a horse "placing" (1st, 2nd or 3rd) using only the win odds of the that horse. This simplifies odds calculation for the bookies, but is not entirely accurate.
- Uses an adapted Kelly Criterion strategy with Expected Growth to calculate the optimal stake.
- Uses Python, Pandas and Selenium to scrape the horse races, interacts with Betfair API to place bets.

Poker Web Application April 2019 - July 2020
https://github.com/tom-pollak/web-poker

- Free live poker web app, users can create accounts and tables, play poker, and chat with other players.
- Implemented in Python, with the Django web framework and a Postgres database, with web-sockets using Django Channels and Redis for real-time communication with users. Deployed with Docker and Heroku.

SANS Institute August 2020
FOR500 Windows Forensic Analysis
https://www.sans.org/cyber-security-courses/windows-forensic-analysis

- Sponsored by reaching the Elite stage of the Cyber Discovery programme.

Cyber Discovery September 2018 - July 2019

- Independently completed the Cyber Discovery programme, run by HM government.
- Selected as one of the top 500 (of 28,000) students to attend the Cyber Discovery Elite event in London.

SKILLS

Languages	Python, Rust, C++, Haskell, SQL, HTML.
Tools	Linux, Git, VSCode, Neovim, SQLite, RegEx, LaTeX.
Technologies	GitHub, Docker, PyTorch, Numpy, Pandas, Matplotlib, Django, Selenium.