Alfred Wong

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Education

2016 - 2020 | **Trinity College, University of Cambridge** **BA MEng**
Part I Mathematics - Part II Engineering (1)

2014 - 2020 | **Other Qualifications**

STEP	STEP II (S), STEP III (1)	GRE	Verbal 167/170, Quant 170/170, Writing 4.5/6
A Level	3A* (F Maths, Maths, Physics)	ACT	Composite 35/36, English/Writing 31/36
	2A (Chemistry, History)	GCSE	11A*, 2A

Experience

Summer 2019 | **Goldman Sachs**
Finance | *Developed a full stack system and contributed to some quant projects*

- Java/Spring: queried data from Db2/JMX and deployed an SQL-like database to prod for storage
- JS/React: built a graphical frontend displaying time-series analyses and routing flow indicators
- Slang: wrote various small scripts (reports/models) for the Eqs Structured Products Strat Desk

Summer 2018 | **PlayFusion**
Research | *Implemented an asynchronous, probabilistic tree search based AI with a distributed self-play setup*

- Unity/C#: optimised and established communication channels within existing game logic and coded an adaptation of AlphaZero's APV-MCTS method, applying concurrency-oriented tweaks
- Python: deployed a scaling self-play/training infrastructure on AWS using TCP/IP networking
- Keras/Tensorflow: ran experiments with a basic two-headed neural network as a placeholder

Summer 2017 | **WaterScope**
Non-profit | *Automated processes within a 3D-printed water-testing microscope for use in developing countries*

- Modelled and printed various 3D components to operate in conjuction with an RPi and Arduino
- Parallelised image convolutions within a golden-section search to optimise autofocus performance
- Self-started a spin-off project, using HSV spectrum/time-series analyses for CFU segmentation

Leadership and Achievements

- Trinity College Basketball Captain, led 3 sessions a week, promoted to Division 1 by end of year
- First and Third Lower Boats' Captain, coached 100+ novices as a team of 7, fastest NW1 & NW3
- 1st Men's Novice VIII, 9/9 race wins, fastest novice crew across 2700m for the first time in 33 years
- Composed for and led an orchestra, choir, small groups and soloists for a school competition, as a team of 3
- School Symphony Orchestra, played as Concertmaster for Dvorak 9, Violin 2 leader for Beethoven 5
- School Prefect & House Vice-Captain, organised and participated in sports teams across all year groups
- Sat Round 2 of the British Mathematical Olympiad, invited to an Olympiad Training Camp at Oxford
- Represented the English National Junior Chess Squad on an international level in Gibraltar

Projects and Skills

Feature Disentanglement and Balanced Representation Learning for Medical Machine Learning

- Masters diss focused on individualised healthcare and causal graph (counterfactual) inference
- Performed feature selection for treatment effects with consideration for confounding biases
- Involved GANs, actor-critic RL and representation learning, using Pandas/Keras in Python

Tetris Implementations

- C: drove a $96 \times 64 \times 16$bit colour display at 60fps with a KL03 ARM Cortex-M0 (2kB SRAM)
- OCaml: learning functional programming with the goal of developing a self-taught PvP AI

Python · C/C++ · Java · JavaScript · React · HTML/CSS · OCaml · Git · CI/CD · Agile · Linux · Bash/Shell · LaTeX · Basketball · Climbing · Rowing · Table Tennis · Chess · Piano · Violin · Guitar · Black-Scholes · Quantum Mechanics · AWS · SQL · Keras/Tensorflow · Machine Learning · Computer Vision · Measure Theory · Computational Neuroscience