Alfred Wong

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Education

2016 - 2020 | **Trinity College, University of Cambridge** **BA(hons) MEng**
Part I Mathematics Part II Engineering (1st, 74%)
Relevant courses: Linear Algebra, Markov Chains, Numerical Analysis, Optimisation, Statistics, Statistical Signal Processing, Inference, Computational Neuroscience, Deep Learning and Structured Data

2009 - 2016 | **Reading School**

STEP	STEP II (S), STEP III (1), for admission into the Cambridge Mathematical Tripos
A Level	3 A*s (Mathematics, Further Mathematics, Physics), 2 As (Chemistry, History)
ACT	Composite 35/36 (English 34, Mathematics 35, Reading 35, Science 36)
GCSE	11 A*s, 2 As (inc. FSMQ Additional Mathematics)

Experience

Summer 2019, 10 weeks, *Corporate* | **Goldman Sachs, London** **Summer Analyst**
Developed a full software stack for flow vis and analysis of a distributed transaction processing system
- Proposed and deployed a stack consisting of Java/Spring components with a JavaScript/React UI
- Engaged in various networking activities, collaborating with MDs and global team members
- Reached out to the Eqs Structured Products Strat Desk and worked on various side projects

Summer 2018, 3 months, *Research* | **PlayFusion, Cambridge** **Intern Developer**
Theorised a neural network based AI capable of teaching itself to play a newly developed DCCG
- Researched and adapted algorithms based on DeepMind's AlphaGo Zero (Nature, Oct 2017)
- Designed a bespoke distributed computing infrastructure using TCP/IP/Python on AWS EC2
- Implemented a basic two-headed neural network to drive self-learning using Keras/Tensorflow

Summer 2017, 2 months, *Startup* | **WaterScope, Cambridge** **Contractor**
Produced a fast autofocus and imaging solution for a 3D-printed water-testing microscope prototype
- Modelled and 3D-printed a screw drive actuator to connect existing mechanisms to a servo motor
- Improvised a hybrid golden section/exhaustive search algorithm to suit the target application
- Started a spin-off image processing project (Real-Time CFU Tracker for Same Day Water Testing)

Projects

2017 - present | **Real-Time CFU Tracker for Same Day Water Testing in Developing Countries**
- Combining traditional CV techniques with novel time-series analysis and machine learning
- Multidisciplinary collaboration involving microbiology, engineering and a field trip to New Delhi

2018 - 2019 | **Engineering Tripos Short Reports and Full Technical Reports**
- The Shottky Barrier Diode
- Gyroscopic Phenomena
- Evaluating Drug Discovery
- Bayesian Logistic Regression
- Coding in the Visual Cortex
- Medical Imaging and 3D Computer Graphics

2016 - 2018 | **Mathematical Tripos Computational Projects (CATAM)**
- Public Key Cryptography
- Ordinary Differential Equations
- The Restricted Three-Body Problem
- Golden Section Search

2015 - 2016 | **Quadcopter Control Theory**
- Built a custom rig to allow two quadcopter rotors to operate antagonistically on a single axis
- Implemented Arduino-based PID control using sensor data from an Inertial Measurement Unit

Leadership and Achievements

- Trinity College Basketball Captain (2018-19)
- First and Third Lower Boats' Captain (2017-18)
- Co-produced, composed and led a musical programme consisting of an orchestra, choir, small groups and soloists for a school competition (2016)
- School Prefect & House Vice-Captain (2015-16)
- Sat Round 2 of the British Mathematical Olympiad and attended the Olympiad Initial Training Camp at The Queen's College, Oxford, by invitation (2013-14)
- Competed in the Gibraltar International Junior Chess Festival as part of the English National Chess Junior Squad (2012)