Guy UONG

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EDUCATION

Sept 2018 – Jul 2022
University of Cambridge, Selwyn College
MSci and BA (Hons) in Natural Sciences (Astrophysics) [2.1]
- Topics studied include: Astrophysical Fluid Dynamics, Statistical Physics, Vector Calculus, Linear Algebra, ODEs, PDEs, Calculus of Variations.

Sept 2011 – Jul 2018
Dartford Grammar School
International Baccalaureate Diploma [44 points]
- Higher Level: Mathematics (7), Physics (7) and Chemistry (7)
- Standard Level: English Literature (7), Economics (6), Mandarin Chinese (7)

GCSEs [11 A*]
- Subjects include Mathematics, Physics, Chemistry, Biology, English, Mandarin Chinese and others.

Sept 2014 – Jul 2017
Trinity Laban Conservatoire of Music and Dance
- Scholarship to study violin and piano.
- Participated in various groups, leading Sinfonia Orchestra and Mezcla ensemble.

RELEVANT PROJECTS

Sept 2021 – Jun 2022
Dynamical Friction on Supermassive Black Holes in Galaxy Formation Simulations
- Examined academic literature to understand factors limiting the accuracy of modelling dynamical friction in current research implementations.
- Ran cosmological simulations on Linux-based HPC facilities, designing and developing scripts in Python to analyse over 100 million observations per data set, evaluating changes in accuracy as a function of resolution.
- Categorised three thresholds for simulation accuracy, presenting findings in a written report and to a panel of current researchers.

Sept 2020 – Jun 2021
Particle and Photon orbits near a Black Hole
- Scripted an implementation of a 4-th order Runge-Kutta method to solve differential equations governing particle orbits about black holes.
- Evaluated computational model against known analytic solutions for stable/unstable circular orbits by simulating particle trajectories.

Sept 2020 – Jun 2021
Monte Carlo simulation of the Ising Model
- Devised a Monte Carlo simulation of the 1D Ising model in MATLAB to mimic the behaviour of the system based off a Fermi-Dirac distribution.
- Verified the validity of simulated systems by applying curve fitting scripts and calculating variance across additional trials.

Jan 2020 – Mar 2020
Extended Investigation on determining Laser Wavelength
- Worked collaboratively in a group to design and conduct experiments with limited resources, assigning tasks according to member strengths.
- Used Excel to perform regression analysis verifying values correct to one standard deviation and create visualisations of data.
- Gave a presentation to explain group objectives, methodologies, conclusions and scope for further work and improvements.

WORK EXPERIENCE

Oct 2015 – Oct 2015

Kent County Council, Dartford Library – Volunteer Helper

- Helped staff prepare weekly public events and resolve daily inquiries from members of the public, helping them access library resources.
- Operated a new ICT to register and track item movements.
- Accessed and reconciled cash from self-service machines.

Sept 2014 – Jul 2015

The Mick Jagger Centre, The Red Rooster Project – Volunteer Helper

- Assisted various teams in teaching young children musical instruments, creating engaging learning environments and arranging classroom escorts.
- Worked effectively with staff to manage instrument reserves as well as organise and deliver successful termly concerts.

ADDITIONAL SKILLS

Programming languages

Confident in:

- Python (since 2021): NumPy, SciPy, Matplotlib, H5py libraries.
- Microsoft Office: Word, Excel and PowerPoint.

Experience with:

- C++ (since Nov 22): Functions, Loops, If/Else logic, Arrays, Vectors, References and Pointers, Templates, Structs.
- MATLAB (2020-21): Functions, Loops, If/Else logic, Arrays, Curve fitting, Graph plotting.

Communication

- Regularly produced technical reports aimed at non-specialists detailing the aims, methods and outcomes of experiments.
- Acted on behalf of the student body as Course Representative, raising concerns and proposing suggestions leading to improvements in remote learning during the Coronavirus pandemic.

Teamworking

- Collaborated with different teams weekly to perform experiments, working effectively by dividing tasks according to strengths.
- Worked with musicians in various ensembles, cultivating good relationships leading to invitations to perform with various collegiate music societies.

Time management

- Organised and prioritised tasks to allow participation in extra-curricular activities including termly concerts and weekly swimming.
- Worked under pressure preparing for academic and musical exams in tandem without compromising the commitments to either.

Languages

- Limited Mandarin Chinese (International Baccalaureate level 7 ab initio)
- Conversational Cantonese