Ocean Wong (Hoi Yeung Wong)
PhD student in physics (neutron spectrum unfolding)
Organizations: Culham Centre for Fusion Energy/ Sheffield Hallam University
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PhD student with specialist knowledge in machine learning, inverse problems, analytical error propagation, iterative algorithms, and neutron spectrum measurement; as well as a strong aptitude and a unique approach to problem-solving.

1 Research experience

Neutron spectrum unfolding suite developer (using Neural Networks) Jun—Sep 2019

- Developed a novel approach to the long-standing problem of inferring the neutron spectrum in a mathematically underdetermined system.
- Collaborated with other programmers on the same repository using Git.
- Developed and optimized a Neural Network using Google's TensorFlow framework, which is then incorporated into the unfolding suite along with the appropriate documentations.

Nuclear Physics Laboratory Oct—Dec 2019, Oct—Dec 2018

- Identified unknown elements using neutron activation analysis and gamma spectroscopy using a High Purity Germanium detector.
- Measured the neutron flux in neutron bath using a BF_3 detector.
- Analysed the results using Pythons numerical processing capability; and then visualized them graphically via Python as well.

Summer Physics internship, School of Physics and Astronomy, University of BirminghamJul—Aug 2018

- Worked on a group project to produce a working prototype of a radiation detection drone.
- Gained relevant specialist knowledge about the workings of cyclotron, GPS and radiation detector, as well as radiation protection procedures.

Fusor Group Project, University of Birmingham Oct 2015—Sep 2019

- Recruited as part of Fusor Project team, following from an interview selection process.
- Worked with 7 other more senior students to build a Farsworth nuclear fusor.
- Successfully applied for a grant of £2800 on behalf of the group to cover the cost of the power supply.

2 Software repertoire

- Programming languages: Python, Fortran, Bash, R, C++, PowerShell
- GIT: GitHub (@OceanNuclear) and GitLab(@OceanNuclear)
- Markdown language: LaTeX
- Propreitory software: Abaqus, Adobe Premiere Pro, Adobe InDesign, Vectr, Microsoft Excel, Word

3 Qualifications

PhD Physics, Sheffield Hallam University — Oct 2019—Oct 2023

Title: ENFUSE: Effective Neutron Spectrometery for FUSion Environment

- Reviewed existing algorithms and developed new algorithms for neutron spectrum unfolding in underdetermined condition
- Selected foils to be used according their unfolding effectiveness and feasibility
- Expected to design a module for neutron activation foil irradiation inside fusion reactors as part of the degree.

MSc Physics and Technology of Nuclear Reactors, University of Birmingham — Oct 2018—Oct 2019

Results: **distinction**; modules:

- Nuclear Instrumentation, Radiation Dosimetry and Protection
- Radiation Transport, Thermal Hydraulics and Reactor Engineering
- Reactor Materials, Reactor System and NDE
- Practical Skills
- Research Project

BSc Nuclear Science and Materials, University of Birmingham — Sep 2015—Jul 2018

Results: **2:1**; modules:

- Classical Mechanics and Relativity 1 & 2
- Electromagnetism I and Temperature and Matter (including Electric Circuits)
- Statistical Physics and Entropy
- Particles and Nuclei and Nuclear Physics
- Mathematics for Physicist 1A & 2
- Physics Laboratory 1 & 2
- Physics Communication Skills (including C++ Computing)

Shung Tak Catholic English College (Hong Kong) — Sep 2009—Jul 2015

HKDSE (Hong Kong Diploma of Secondary Education exam)

- Physics 5**, English 5*, Algebra and Calculus 5, Chemistry 5, Mathematics 4, Biology 4
- Equivalent to A*A*AABB in A levels