

NELSON NGAI

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PROFILE

Energetic and innovative professional, well-trained in Data Science and Machine Learning from UCL. Capable of developing and implementing advanced machine learning models and deep learning algorithms. Proficient in data processing, statistical analysis, and predictive modelling, with a primary focus on Python. Honed strong mathematical and problem-solving skills from my formal training in theoretical physics.

SKILLS

Languages

- Proficient in Python, leveraging libraries such as numpy, matplotlib, ipywidgets, plotly, pandas, pyspark, scikit-learn, Pytorch, and statsmodels for comprehensive data analysis, visualization, and implementation of machine and deep learning techniques.
- Familiar with MATLAB, Mathematica and SQL.

Tools

- Proficient in Git, Docker for Collaboration and software development.
- Familiar with HTML5, CSS, nodejs, surge for web development.
- \LaTeX , Microsoft Office

WORK EXPERIENCE

Kindred Group plc.

2023

Data Science Intern

- Explored machine-learning based recommendation systems for implicit feedback through negative sampling techniques.
- Implemented models such as logistic regression and LightGBM; utilised sentence transformer for feature encoding.
- Conducted residual analysis on the models' performance.

The Hong Kong Space Museum

2022

Programme Assistant

- Developed a Python application to automate all-sky cameras and sky quality meters located in multiple county parks across Hong Kong. 📄 It can adjust camera settings such as exposure and ISO based on sky brightness, ensuring the images are perfectly exposed at any given time. The images feature real-time information overlay, including sky brightness, weather conditions, and visibility, providing valuable insights for individuals planning their stargazing trips.
- Collaborated in the design of materials for outreach programs, which included creating presentation slides, worksheets, and DIY teaching kits. These resources aimed to facilitate the understanding of various physical phenomena and engineering concepts, such as electromagnetism and elementary rocket science.
- Led and coached volunteers at museum and outreach events, organising logistic and demonstrating the use of equipment such as telescopes and cameras.
- Provided technical support for live streaming on YouTube and Facebook using OBS Studio, setting up all necessary hardware to ensure smooth and seamless event execution.
- Experienced in content creation, posting regularly about the newest exhibitions, upcoming astronomical events and general space knowledge across various social media platforms.

Wo Muk

2021 - 2022

Co-founder of takeaway business

- Managed liquidity, maintaining inventory controls, preparing comprehensive financial reports in Excel and Python, and administering expense reconciliations.

- Established and nurtured excellent relationships with regular customers, meticulously attending to their individual needs.
- Championed product promotion through online advertising and content creation across social media platforms.
- Developed a Python-based Point of Sale system, automating data entry tasks.

Tutor 2016 - 2022

Previously engaged in multiple teaching centers in Hong Kong, as well as providing both individualized and group private tutoring sessions.

- Conducted Mathematics and Physics lessons for secondary school students, effectively tailoring teaching strategies to accommodate individual student strengths and weaknesses.
- Delivered both in-person and online lessons, demonstrating proficiency in leveraging technology to enhance teaching effectiveness.

ACADEMIC EXPERIENCE

University College London 2022 - 2023

Individual and collaborative projects across selective modules

- *Applied Deep Learning | Pytorch, Google Colab*: Collaborated with an 8-member team on a project focused on semantic image segmentation. The project involved contrasting the performance of conventional supervised learning algorithms with the Mean-Teacher semi-supervised algorithm.
- *Statistical Natural Language Processing | Python, Huggingface* 🤖: Led and delegated tasks within a 4-member team to develop a code generation application, focusing on fine-tuning large language models, including GPT-2, T-5, and Marian-MT.
- *Algorithmic Trading | Python, scikit-learn*: Applied time series analysis, ARMA modeling, and conducted Gaussianity and stationarity tests on historical stock indices. Also explored various trending strategies for leverage trading.
- *Applied Machine Learning | Python, Pytorch, scikit-learn* 🤖: Implemented popular algorithms including Random Forest, AdaBoost, and Support Vector Machine from scratch, thereby gaining a deep understanding of their underlying mechanisms and operations.
- *Introduction to Statistical Data Science | Python, statsmodels*: Collaborated with a team of six students to perform statistical analysis on the UCI dataset, focusing particularly on hypothesis testing for goodness-of-fit and two-sample tests.

Imperial College London 2019 - 2020

Thesis: An Introduction to Quantum Cosmology and Solutions to the Wheeler-DeWitt Equation. Supervisor: João Magueijo

- Established the mathematical foundation of Quantum Cosmology and derived the Wheeler-DeWitt Equation, which shares an analogous structure to Schrödinger's Equation in Quantum Mechanics. A closed-form solution for this equation was identified.

EDUCATION

University College London London, England

MSc Data Science and Machine Learning, Distinction (predicted) 2022 - 2023

Imperial College London London, England

MSc Physics, Distinction 2019 - 2020

Cardiff University Cardiff, Wales

BSc Physics with Astronomy, 1st class honours 2016 - 2019

CERTIFICATIONS AND OTHER EXPERIENCE

Volunteering

- *Mentor of 16th Hong Kong Scout Group (2015 - 2023)*: Organized meetings and imparted vital skills such as outdoor survival, backwoods cooking, pioneering, camping, and first aid to new scouts members.
- *Standard Chartered Hong Kong Marathon (2012 - 2013)*: Volunteered at the annual Marathon, contributing to participant registration, safeguarding belongings, and efficiently managing event logistics.

Hobbies

- Workout and Calisthenics. I keep track of my progress with a streamlit application. [🔗](#)
- Grade 8 Piano.
- Basketball - Member of the Cardiff Hong Kong Basketball Team from 2016 - 2019.