JEFFREY C.C. CHAN

@ jeffreyrdcs@gmail.com · London, UK · jeffrycchan.com
in linkedin.com/in/jeffreyccchan · github.com/jeffreyrdcs · orcid.org/0000-0001-6251-3125

WORK EXPERIENCE

Senior Data Scientist
Lanterne Ltd

📅 Oct 2021 – Mar 2024 · 📍 London, UK

Lanterne is a B2B company providing consultancy and a data-driven operations productivity platform to improve efficiency in micromobility, shared fleets, and urban transport logistics.

- Productionized and maintained the company's dynamic demand prediction model and ETL pipeline, leveraging geospatial and temporal data with AWS services (Lambda, Glue, DynamoDB etc.) to forecast micromobility demand by region and time of day in European and US cities, enhancing operational efficiency and optimizing fleet distribution for clients
- Designed and developed the machine learning model for the company's expansion product that accurately predicts micromobility demand in new markets without historical trips data, achieving over 70% accuracy in external validations and substantially aiding client's strategic market entry and business decisions
- Established and oversaw the metrics tracking system and the internal metrics dashboard using Dynamodb, Lambda, Athena and Looker Studio, enabling real-time operational insights and decision-making
- Conducted data analyses and visualization to validate and showcase the product's impact on clients' fleet utilization and operational efficiency, directly contributing to the acquisition of key client contracts
- Played a key role in frontend and backend development, ensuring accurate delivery of tasks and insights to customers through collaborative team efforts.
- Optimized key algorithms across the codebase, boosting system efficiency and reliability while enhancing code maintainability. Achievements include accelerating a client-facing service by 80x, reducing processing time from approx. 30 seconds to 0.4 seconds, and improving the model inference pipeline speed by 23x, cutting down from approx. 1 hour 45 minutes to 4.5 minutes.
- Led major enhancements and optimizations of the route optimization engine using OR-tools, reducing computation times by 70% and expanding operational capabilities to meet diverse customer needs.

Postdoctoral Researcher
University of California, Riverside

📅 Jan 2017 – July 2020 · 📍 Riverside, CA, USA

- Led research projects in multiple international collaborations to study the properties of galaxies in high-redshift galaxy clusters, leading to several peer-reviewed research publications
- Performed extensive data wrangling and analysis on terabytes of ground-based and space-based telescope data with custom-built data pipelines using Python and IDL
- Designed software packages and developed scripts in Python and R to perform morphological modeling and simulations on tens of thousands of galaxies for comparison with real-world observations
- Prepared the setup required for observations and operated telescopes (on-site with Keck/MOSFIRE at Waimea, HI and Gemini/GMOS at Hilo, HI, USA for 18 nights in total and remote) to collect imaging and spectroscopy data
- Managed and maintained the Linux data server of the group, allowing collaborators to access data remotely
- Presented and promoted my research findings at various international conferences, workshops and seminars

SKILLS

Data Analysis · Data Visualisation · Machine Learning · Statistics · Problem Solving · Project Management · Public Speaking · Science Communication · Web Development

TECHNICAL SKILLS

Python · HTML/CSS · R · SQL · JavaScript · IDL · C++

AWS Lambda · DynamoDB · Glue · Sagemaker · Athena · S3 · Amplify · ECS · EC2

Docker · JupyterLab · Pandas · GeoPandas · Numpy · Scikit Learn · Keras · TensorFlow · Looker Studio · Plotly/Dash · React · OR-Tools · Kivy · Flask · Spark · Fusion 360 · LaTeX · Git · Unix / Linux

LANGUAGES

English ●●●●●
Cantonese ●●●●●
Mandarin ●●●●○

PUBLIC SPEAKING

Delivered 7 international conference talks, 8 workshop talks and 5 seminars at various institutes

PUBLICATIONS

40 refereed publications (4 first author) in journals including The Astrophysical Journal, Monthly Notices of the Royal Astronomical Society, Astronomy & Astrophysics, and Nature. **h-index: 28**

Publication list on ADS:
https://ui.adsabs.harvard.edu/public-libraries/T2FgtCPxTUyf9xLwwq5c4g

EDUCATION

PhD in Astronomy (*Magna Cum Laude*)

Max Planck Institute for Extraterrestrial Physics (MPE)

📅 Nov 2012 – Oct 2016　　　　📍 Munich, Germany

- Dissertation: "Constraining the formation and evolution of cluster galaxies at $z \sim 1.5$ using sizes and colour gradients"
- Developed a new imaging technique to derive spatially-resolved mass distribution of galaxies from multi-band Hubble Space Telescope (ACS and WFC3) data
- Integrated new modules with existing data pipeline designed for modelling galaxy photometry
- Developed custom-built code to reduce and analyze extremely imaging and spectroscopy data sets (VLT/HAWK-I, Spitzer/IRAC, VLT/KMOS)
- Performed observations with VLT/KMOS at Paranal Observatory for 14 nights

MPhil in Astrophysics

The University of Hong Kong (HKU)

📅 Sept 2010 – Oct 2012　　　　📍 Hong Kong

- Dissertation: "Kinematics Constraints on Structuring of the Optical Emission-Line Nebula in NGC 1275"
- Analyzed hundreds of integral-field optical spectra from PMAS/PPAK to measure the physical properties of the optical nebula of central galaxy of the Perseus Cluster

BSc in Mathematics/Physics (First Class Honours)

The University of Hong Kong (HKU)

📅 Sept 2007 – June 2010　　　　📍 Hong Kong

- Bachelor research project: "Coronal Magnetic Activity at the divide between partially and full convective stars"
- Processed and analyzed radio interferometry data from ATCA and VLA

PROJECTS

- **Python Kivy App** - Designed and developed a password manager application **"RD Pass"** using Python Kivy framework and SQL with a back-end database and AES encryption
- **Stock Data Visualization Dash App** - Developed a US stock screener **"stock-vcpscreener"** in python and a web-based visualization application in Dash that generates a daily stock market analysis report. More details in the Github repo
- **Firefox Extension** - Developed and published a Firefox browser extension **"Crypto Price Checker"** using HTML/CSS and JavaScript for tracking cryptocurrency prices using crypto exchange APIs

COURSES

- **Neural Networks and Deep Learning** (Neural network architecture basics)
- **Python for Data Science and Machine Learning Bootcamp** (Scikit-Learn, TensorFlow, Spark)
- **Python for Financial Analysis and Algorithmic Trading** (Time series analysis)
- **Algorithms Part I & II** (Data structures and algorithms)

AWARDS

Ph.D. Studentship (Deutsches Zentrum für Luft- und Raumfahrt e.V., DLR grant)　　📅 2015 - 2016

IMPRS Fellowship　　📅 2012 - 2015

Postgraduate Studentship　　📅 2010 - 2012

Best Presenter in Undergraduate Research Colloquium　　📅 2010

Li Po Kwai Scholarship　　📅 2009

Dean's Honours List　　📅 2008

HKU Foundation Entrance Scholarship　　📅 2007

TEACHING AND OUTREACH

Referee/Reviewer for the Astrophysical Journal and the Astronomical Journal

📅 2018 - 2021

Volunteer for the 2017 total solar eclipse event

📅 Aug 2017　　　　📍 UCR, Riverside, CA, USA

Demonstrator at Open day event

📅 Oct 2017　　　　📍 MPE, Garching, Germany

Tutor of PHYS2022 "Observational Astronomy" and PHYS1414 "General Physics I"

📅 2010 - 2012　　　　📍 MPE, Garching, Germany

Organizer of the Physics Summer Workshop for High School students

📅 Aug 2008　　　　📍 HKU, Hong Kong

Internal Vice Chairperson of Physics Society

📅 2007 - 2008　　　　📍 HKU, Hong Kong