

Jeffrey Jin

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SUMMARY

Meteorologist and data scientist with dual MScs and experience in operational forecasting, aviation weather, machine learning, and large-scale geospatial data analysis. Specialised in extracting predictive signals from meteorological data to support risk-based decision-making.

EXPERIENCE

Meteorological AI Training Expert

Mar 2026 - Present

Micro1 · Remote

- Applied atmospheric analysis to classify air masses and standardise mid-latitude synoptic feature identification across the CONUS domain.
- Translated complex synoptic-scale processes into structured, machine-interpretable annotations for model development.
- Generated 25+ weekly HRRR-based weather analysis reports to train AI models in atmospheric pattern recognition and forecasting.

Scientific Officer

October 2021 - November 2023

Hong Kong Observatory · Hong Kong

- Head of the Radar Section, managing daily radar data pipelines (>99% availability) and delivering 5+ radar products into production.
- Conducted quantitative analysis using Python on 100+ high-impact weather events, extracting insights to inform operational strategies.
- Applied statistical analysis and machine learning to temperature and rainfall forecasting, achieving an overall accuracy score above 85%.
- Worked in real-time operational forecasting and delivered public and aviation weather forecasts under tight deadlines.

Computational Scientist

January 2020 - August 2021

ClusterTech Limited · Hong Kong

- Built and maintained end-to-end HPC workflows for daily numerical modelling (WRF, MPAS, CMAQ), including Python-based pipelines to extract, validate, and visualize meteorological and air-quality outputs for quality control and client reporting.
- Designed variable-resolution weather prediction meshes for energy applications across Hong Kong, China, and India; achieved >80% accuracy.
- Provided weather and air pollution-related consulting services and training to international clients.

EDUCATION

MSc in Environmental Data Science & Machine Learning

2025

Imperial College London · United Kingdom · High Merit

- Independent Research Project — Applied ML to large-scale climate-ocean datasets, including one of the first uses of XGBoost and LSTM with lagged predictors to model ocean-atmosphere interactions and climate predictability across multiple lead times.
 - Demonstrated transferable methods for meteorological time-series analysis and achieved $R^2 = 0.52$ on test data.
- Developed ML models to extract predictive signals from large spatiotemporal datasets.
 - CNN/U-Net and XGBoost models for predicting US storm activity and forecasting UK flood risk using remote sensing and meteorological data.
 - LSTM and transformer architectures for past climate variability reconstruction from incomplete observational data.

MSc in Applied Meteorology

2019

University of Reading · United Kingdom · Distinction

- Key Modules: Python Computing, Atmospheric Physics, Numerical Modelling, Statistics for Meteorology.
- Sutcliffe MSc Prize for Applied Meteorology — Best overall academic performance in the cohort.

BSc in Earth System Science

2018

University of Hong Kong · Hong Kong · GPA: 3.53

- Scholar of the Year Award, Ricci Hall (2017) — Best academic performance in Ricci Hall.
- Hui Yin Hing Scholarship (2016) — Best academic performance in the major among second-year students.
- Dean's Honours List (2016) — Top academic performance in the university in an academic year.

PUBLICATIONS & PROJECTS

Radar-based Studies of Mesoscale Convective Storms Using Different Frequency Bands of Weather Radars

The 35th Guangdong-Hong Kong-Macao Meteorological Science & Technology Symposium · 2023

Characteristics of Raindrop Size Distributions in Southern China under Different Weather Scenarios

The 11th European Conference on Radar in Meteorology and Hydrology · 2022

Energy Price Modeling — Developed Temporal Fusion Transformer (TFT) models to analyze energy price behavior using weather reanalysis data, with an emphasis on interpretable supply-and-demand relationships and key market drivers in the renewable energy sector.

Wildfire Risk Modelling — Studied utility wildfire mitigation plans and tools (e.g., Technosylva, PSPS/ESS), with a focus on how meteorological conditions and infrastructure risk inform operational decision-making.

SKILLS

- **Meteorology:** operational forecasting, high-impact weather analysis, Global and regional NWP modelling, aviation meteorology, ERA5 reanalysis.
- **Programming:** Python (NumPy, pandas, xarray, netCDF4, Matplotlib, scikit-learn, PyTorch, TensorFlow), SQL, C/C++ , R.
- **Machine Learning:** feature engineering, gradient boosting, deep learning (CNN, GNN, LSTM, transformers, LLM), end-to-end ML pipelines.
- **Data Analytics:** EDA, data processing, data visualization, PCA/EOF analysis, time-series forecasting, data management.
- **Computational Mathematics:** Calculus, Linear Algebra, SVD, Inversion and Optimisation algorithms.
- **Cloud Computing:** HPC workflows, virtual machine management, AWS, Microsoft Azure, Google Cloud Platform (GCP).
- **Tools & Software:** Git, Linux/Shell scripting, Power BI, Excel, LaTeX, ArcGIS, ENVI, GitHub Copilot, OpenAI, Gemini.
- **Languages:** English (fluent), Cantonese (fluent), Mandarin (fluent), Spanish (intermediate).