

James Wu

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WORK EXPERIENCE

UNIVERSITY COLLEGE LONDON

London, UK

Research Assistant (MSc.)

June 2022 - Present

Gaussian Wasserstein Inference in Function Spaces (WIP)

JAX, Flax, Optax

- Leveraging **Generalised Variational Inference** to build a loss objective with the **Wasserstein distance** for image classifier **sparse Gaussian Processes** constructed with **NNGP infinite-width kernels**

Integral Probability Metrics

JAX

- Explored kernel-based distribution discrepancies **Maximum Mean Discrepancy** (MMD) and **Kernel Stein Discrepancy** (KSD)

REVOLUT LTD.

London, UK

Machine Learning Engineer (Junior → Mid → Senior)

Aug 2019 - Sept 2022

Bayesian Time-Series Forecasting: Gaussian Processes

Pyro, PyTorch, BayesOpt, Airflow, GCP

- Earned rebates of \$100M+/year and ensured Revolut's profitability
- Managed global card issuance for over 20M users
- Developed a general training pipeline with **Gaussian Processes** and **Bayesian optimisation** to forecast user activity, spending, and growth
- Published models to internal **PyPi** for use across the business (i.e. liquidity forecasting for Treasury)

NLP Text Embeddings: BERT Sentence Transformers

PyTorch, MLflow, Elasticsearch, Scikit-Learn, Airflow

- Developed self-serviced customer support chatbot
- Built semantic search and intent recognition of customer chat messages with **one-shot learning** and **transformer-based embeddings**

User Behaviour: Recurrent Neural Networks

TensorFlow, PySpark, Dataproc, Airflow, GCP

- Personalised user experiences to improve retention
- Developed **LSTM** solution to predict spending behaviours at a user level
- Clustered behaviours with **t-SNE** to guide personalised content delivery

UNIVERSITY OF TORONTO

Toronto, CA

Research Assistant (BAsC.)

Sept 2018 - Apr 2019

NLP for Biomedical Text

PyTorch

- Achieved state-of-the-art performance for **named-entity recognition** (NER) of biomedical literature with **transfer learning** and **multi-task learning**

ANALOG DEVICES INC.

Toronto, CA

Data Scientist (Intern)

May 2017 - Aug 2018

Person Tracker for In-Home Monitoring: Algorithm Analysis

openCV, Scikit-Learn

- Built a GUI to analyse and identify corner cases for **computer vision** algorithms, improving model performance by ~20%

EDUCATION

UNIVERSITY COLLEGE LONDON

MSc. Computational Statistics & Machine learning (Aug 2023)

First Class Honours

UNIVERSITY OF TORONTO

BAsC. Engineering Science

Graduated with Honours

RELEVANT STUDIES

Approximate Inference

Unsupervised Learning

RKHS's in Machine Learning

Statistical Learning Theory

Reinforcement Learning

Convex Optimisation

Computer Vision

Supervised Learning

Algorithm Design & Analysis

SOFTWARE SKILLS

Strong Proficiency:

Python • Git • Airflow

Intermediate Proficiency:

PySpark • Kubeflow • SQL
Docker • GCP • LaTeX

Familiar:

C • PIC Assembly

PERSONAL INFO

Canadian Citizen

Native English Proficiency

PUBLICATIONS

Power Optimization Using Embedded Automatic Gain Control Algorithm with Photoplethysmography Signal Quality Classification (ICASSP 2020)

Robust Beat-To-Beat Detection Algorithm for Pulse Rate Variability Analysis from Wrist Photoplethysmography Signals (ICASSP 2018)

Development and Validation of a 3D-Printed Neuronavigation Headset for Therapeutic Brain Stimulation (Journal of Neural Engineering 2018)