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
JAX, Flax, Optax

- Incorporating well-calibrated uncertainty estimates to **convolutional neural networks** for image classification with **infinite-width kernels** (NNGPs)
- GitHub Link (WIP)

Integral Probability Metrics
JAX

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

REVOLUT LTD. — **London, UK**
Machine Learning Engineer — 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
Natural Language Processing
PyTorch

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

ANALOG DEVICES INC. — **Toronto, CA**
Data Scientist — 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
In Progress

UNIVERSITY OF TORONTO
BASc. Engineering Science
Graduated with Honours

RELEVANT STUDIES

Approximate Inference
Unsupervised Learning
Supervised Learning
Convex Optimisation
Statistical Learning Theory
Computer Vision
Kernel Methods
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)