# 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
- Using **Wasserstein distance** as a loss objective 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-tasked 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**
Expected Completion: Aug 2023

**UNIVERSITY OF TORONTO**
**BASc. Engineering Science**
Graduated with Honours

## RELEVANT STUDIES

Approximate Inference
Unsupervised Learning
RKHS's in Machine Learning
Statistical Learning Theory
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)