

# BAITING ZHU

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## EDUCATION

### University of California, Los Angeles (UCLA)

Los Angeles, California

Bachelor of Science in Mathematics of Computation, Minor in Statistics

Expected March 2023

Academics: GPA: 3.94 / 4.00

Honors: Dean's Honor List, DataFest 2020 (1<sup>st</sup>/100 teams)

Courses: Data Mining, Machine Learning, Pattern Recognition, Deep Generative Models, Data Theory Methods, Advanced C++ Programming, Algorithms & Complexity, Data Management Systems, Data Analysis/Regression

**Programming:** Python (PyTorch, Tensorflow, Matplotlib), C++, R, Unix Shell, PostgreSQL, LISP, Spark, MongoDB

**Skills:** Research, Reinforcement Learning, Machine/Deep Learning, Data Analysis & Visualization, AB-Testing

## PROFESSIONAL EXPERIENCE

### Microsoft Research Asia (MSRA)

Beijing, China

Research Intern (ML Group – Reinforcement Learning)

Jan 2023 – Present

- Working on Contextual RL and Meta RL. Supervisor: Li Zhao

### Kuaishou Technology (1024.HK)

Beijing, China

Deep Learning Engineer (Search Tech)

Mar 2021 – July 2021

- Worked on search models and data tagging pipeline for the Search Algorithm team at Kuaishou Technology
- Improved the BERT-based search model through feature engineering and multi-sample dropout. The model takes the search query and result as a paired input, and predicts the pair's relevance level through multi-class classification
- Boosted model's Group-AUC metric from 73% to 79%
- Achieved a higher click ratio on the top 10 search results given to the user, as validated by online AB-Testing
- Identified model deficiencies using self-developed data analysis and visualization tools in R
- Managed data tagging pipeline. Improved human tagging reliability from 50% to 95%+ by training the data taggers
- Implemented data tagging protocols such as abnormality probing and positive/negative sample balancing using SQL and Python. The pipeline produces 100K tagged data entries weekly

## RESEARCH & PROJECT EXPERIENCE

### Machine Intelligence Group (MINT)

Los Angeles, California

Researcher

Mar 2022 – Present

- Research project on Multi-Objective Reinforcement Learning (MORL) with Professor Aditya Grover
- Implemented offline RL algorithms such as COL, Decision Transformer, and RvS in PyTorch
- Proposed Dataset for MORL (D4MORL), the first MORL dataset and benchmark on high-dimensional MDPs designed specifically for the offline setting. Total of 18M released data on 6 multi-objective MuJoCo environments
- Designed two trajectory distributions measured by achieved return, and three preference distributions measured by the empirical entropy of the samples for D4MORL
- Proposed Pareto Efficient Decision Agents (PEDA): a novel family of *offline* MORL algorithms. The first offline MORL algorithms that take high-dimensional and continuous action control through a *single* model
- Showed that PEDA closely approximates the behavioral policy and provides an excellent approximation of the Pareto-front with appropriate return conditioning, as measured by the hypervolume and sparsity metrics
- First authored paper published in ICLR 2023 (poster) and NeurIPS 2022 Offline RL Workshop (Oral, top 10%)

### Prediction of U.S. Domestic Flights

Los Angeles, California

Machine Learning Project

Oct 2020 – Dec 2020

- Predicted the cancellation of flights through models including Random Forest, SVM, and KNN. Achieved 99.75% test-time accuracy. Selected the 12 most influential features out of 55 total using Gradient Boosted Machines (GBM)
- Performed missing data interpretation and Exploratory Data Analysis on 67K flight data

### DataFest – Data Hackathon

Los Angeles, California

Winner, Best Visualization (1<sup>st</sup>/100 teams)

May 2020

- Studied the shift of consumer demand since the start of COVID-19 using commodity price and search trend data
- Scrapped the historical prices of products on Amazon using Python. Imputed missing values and standardized variables
- Proposed that supply can be represented by commodity price and stocking data, while demand can be represented by Google Search Trends. When combined, we can empirically identify unfulfilled consumer demand in different periods
- Found that consumer demand shifted from protective equipments to entertainment devices as the pandemic progressed
- Visualized data to deliver findings through interactive heatmaps, animated line plots, and dynamic ranking bar plots using R packages including *plotly* and *gganimate*
- Panel: <https://whuai.shinyapps.io/2020DataFest-Maskman/> Video: <https://www.youtube.com/watch?v=hVF1AZTWI9o>