

# TONY ZHU

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## EDUCATION

**Tsinghua University**, *Department of CS and Technology Visiting Student*

Research Assistant at Knowledge Engineering Group (THU Data Mining)

Beijing, China | 2021 – 2022

Relevant Courses: Deep Learning, Machine Learning, Data Mining

**Brown University**, *B.S. Applied Mathematics-Computer Science*

Providence, RI | 2018 – 2023

Relevant Courses: Statistical Inference, Computational Probability and Statistics, Stochastic Differential Equations, Artificial Intelligence, Deep Learning, Computer Systems, Computer Vision, Honors Linear Algebra, Honors Calculus

## SKILLS & INTERESTS

**Programming:** Python (scikit-learn, numpy, pandas, matplotlib, seaborn), Scala, ReasonML, Java, Racket (Scheme), MATLAB

**Technical:** HiveSQL, Tableau, LaTeX, Apache Spark, Statistics (experiment design, A/B testing, hypothesis testing, ANOVA), Data Science Pipeline (cleansing, preprocessing, modeling, interpretation), Machine Learning (Linear/Logistic Regression, K-Nearest Neighbors, Support Vector Machines, Decision Trees, Random Forest, Boosting, Hidden Markov Models, Naïve Bayes), Deep Learning (CNN, RNN, LSTM), AWS Redshift, AWS Quicksight

**Languages:** English, Mandarin, Japanese

**Interests:** Jogging, Swimming, Skiing, World History, Classics

**Personality and Others:** Myers-Briggs (I63 N70 T67 P51), Strengths (Memory Capacity, Attention Performance, Control Automaticity)

## PROFESSIONAL EXPERIENCE

**AWS**, *Business Intelligence Engineer Intern – AWS Payments*

Seattle, US | June 2022 – Sept 2021

- Worked cross-functionally with software engineers, product managers, and engineering managers to identify pain points in existing data reporting
- Designed new metrics and dashboards to improve visibility into customer behavior and drive data-based decision-making capabilities for the Non-Payment Suspension (NPS) system, one of the key payment processes for all of AWS

**Tencent**, *Data Science Intern – Ads*

Shenzhen, China | Apr 2021 – Aug 2021

- Building models to investigate and optimize existing ad exposure strategies, from user profiling to Deep CTR prediction
- Built reports using SQL and Spark queries to author strategy recommendations based on a data-driven framework

**Orient Minerva**, *Quantitative Analyst Intern – R&D Team*

Beijing, China | May 2020 – Aug 2020

- Built forward-looking option pricing models based on Black Scholes Merton (BSM) and Stochastic Alpha Beta Rho (SABR) for the SSE50 index using Python, and developed trading strategies based on implied volatility arbitrage and positive theta decay for deep ITM European-style options

## PROJECTS

**Data Mining Research (Python)**

May 2022

- Training graph based NN models and academic word, topic, and entity linking embeddings on Open Academic Graph

**MLP from Scratch (Python)**

Oct 2021

- Implemented forward and backward propagation through a layered design using only NumPy and pure python
- Designed Fully Connected, ReLU, Sigmoid, Softmax-Cross Entropy, and Euclidean Loss layers

**Search Engine (Scala)**

Apr 2020

- Queries a corpus of ~300k random Wikipedia entries within 10 minutes
- Implemented indexing based on the PageRank algorithm and term frequency, inverse document frequency metrics