Qingxuan (Max) Jiang

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EDUCATION

Massachusetts Institute of Technology　　　　　　　　　　　　　　　　**Cambridge, MA**
Master of Science in Operations Research (GPA: 4.9/5.0)　　　　　　　　　*Sept. 2021 – Dec. 2023*

Cornell University　　　　　　　　　　　　　　　　　　　　　　　　**Ithaca, NY**
Bachelor of Arts in Mathematics and Computer Science, Summa Cum-laude (GPA: 4.11/4.3)　　*Sept. 2017 – May 2021*
- Award/Scholarship:William Lowell Putnam Competition 2017(122 out of 4638); Tanner Dean's Scholars

SKILLS& COURSES

Software: Python (Numpy, Pandas, Matplotlib, Scikit-Learn, Pytorch, and Tensorflow), MATLAB, Julia, Optimization Software (JuMP, Gurobi, CVXPY), R, Java, SQL, C++

Courses: Programming (Object-Oriented Programming, Functional Programming, Data Structure, Analysis of Algorithms); Systems (Computer System Organization, Database System, Operating System); Probability and Statistics; Machine Learning (Deep Learning, Reinforcement Learning, Linear, Nonlinear and Convex Optimization)

EXPERIENCE

Operations Research Center　　　　　　　　　　　　　　　　　　　　**Cambridge, MA**
Research Assistant (Advisor: Retsef Levi and Vivek Farias)　　　　　　　　*Sept. 2021 - Present*
- Worked on multiple machine learning and optimization projects for revenue management; individually performed data processing, deep learning modeling, and parameter tuning to model customer behavior
- Developed and trained a transformer model from scratch to test its applicability on customer choice predictions; tuned hyperparameters and applied regularization for optimal performance; compared prediction results with decision tree and other neural network models and achieved a 5% improvement in accuracy
- Investigated the nonlinear integer programming problem of revenue optimization on trained transformer model; designed a local search algorithm for choosing an optimal set of products for sale; compared results with random search and greedy algorithm, and achieved 25% more profit on grocery sale datasets
- Invited for presentation at the INFORMS revenue management conference

Undergraduate Artificial Intelligence Research Group, Cornell University　　　　　**Ithaca, NY**
Research Assistant　　　　　　　　　　　　　　　　　　　　　　　*Sept. 2018 – May 2021*
- Developed first-order optimization algorithms for batch normalization and its backpropagation in hyperbolic space; incorporated the algorithm as a layer to enhance hyperbolic neural networks and graph convolutional networks and attained 5% improvement in accuracy on citation network datasets; prepared and presented results in a conference paper accepted to ICML
- Contributed to the code implementation of a generative model on manifolds based on the Neural ODE architecture; assisted in writing proofs and preparing a paper accepted to NeurIPS

Department of Computer Science, Cornell University　　　　　　　　　　**Ithaca, NY**
Teaching Assistant　　　　　　　　　　　　　　　　　　　　　　　*Jan. 2018 – May 2021*
- Served as TA for 7 semesters in algorithm, machine learning, and data science courses; taught 300+ students
- Consolidated class materials and commonly asked problems into revision documents for distribution
- Shared lab/research experience and tutored interested students in preparing data competitions and writing papers

Machine Learning Group, Tencent AI Lab　　　　　　　　　　　　　　**Shenzhen, China**
Research Engineer Intern　　　　　　　　　　　　　　　　　　　　*July 2018 - Aug. 2018*
- Individually enhanced the exploration in Bayesian optimization: implemented a new class of hyperparameter-free acquisition functions using TensorFlow to optimize finding local minima for non-convex benchmark; attained faster convergence compared to the baseline model, with a 30% reduction in run-time
- Incorporated code into the company codebase and presented the rationale to a group of research scientists

PROJECT

Predicting Effective Argument in Student Essays　　　　　　　　　　　　**Cambridge, MA**
Project Lead　　　　　　　　　　　　　　　　　　　　　　　　　　*Aug. 2022*
- Led a team of 4 in a Kaggle competition; held daily team connects, managed project timeline, established collaboration norms, and distributed tasks according to each participant's capabilities and interests
- Performed feature engineering, combining handcrafted features with sentence-level embeddings; trained gradient boosting models from scratch and fine-tuned transformer models based on pre-trained BERT architecture; utilized stacking to combine different models into a more robust predictor
- Achieved top 30% among 1500 submissions in a 2-week effort

PUBLICATION

- Aaron Lou*, Isay Katsman*, **Qingxuan Jiang***, Serge Belongie, Ser-Nam Lim, and Christopher De Sa, Differentiating through the Fréchet Mean, International Conference on Machine Learning (ICML), 2020.
- Aaron Lou*, Derek Lim*, Isay Katsman*, Leo Huang*, **Qingxuan Jiang**, Ser-Nam Lim, and Christopher De Sa, Neural Manifold Ordinary Differential Equations, Neural Information Processing Systems (NeurIPS), 2020.