Jason Yuan

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EDUCATION

Princeton University – *Computer Science, B.S.E.* Expected May 2023

- GPA: 3.925 / 4. SAT: 1570 / 1600.
- Minors: Applied Mathematics, Statistics and Machine Learning, Finance.
- Relevant Coursework: Programming Systems, Reasoning about Computation (Discrete Math), Economics and Computation (Algorithmic Game Theory), Mathematical Microeconomic Theory, Advanced Linear Algebra, Multivariable Calculus.

WORK & LEADERSHIP EXPERIENCE

Amazon – *Software Development Engineer Intern, Amazon Web Services (AWS)* Starting May 2021

Princeton University – *Teaching Assistant, Computer Science Department* Feb 2021 - Present

- Host weekly office hours for 100+ undergraduate students in COS 340, an upper-level CS course covering combinatorics, probability, graph theory, complexity theory, cryptography, and theoretical computer science.

Representable (startup) – *Software Engineer* Nov 2020 - Feb 2021

- Developed a full-stack geospatial data collection tool, currently used in 16 states. Backed by Schmidt Futures.
- Optimized client-side visualization feature using JavaScript and Mapbox GL JS. Aggregated GeoJSON data into a single layer to increase render capability by 20x, allowing users to visualize up to 10,000 polygons at once.
- Used Python with Django to implement a retroactive drive form and update a PostgreSQL database after validating data, allowing users to potentially access 2x more data points.

Texas State University – *Research Assistant, Math Department* Jun 2018 - Aug 2019

- Built a pipeline in Mathematica to convert protein data into a 3D mesh and a point cloud with 300,000+ data points.
- Implemented topological data analysis algorithms with MATLAB and JavaPlex to detect holes, tunnels, and cavities in the protein - features critical to biology and cancer research.
- Used data filtering techniques to extract key points in the dataset, speeding up the detection algorithm 3x.
- Coauthored paper and published in a conference (see here).

Prospect Student Ventures – *Associate, Venture Capital* Jun 2020 - Present

- Conduct diligence on early-stage, student-founder startups at Princeton to invest $1-10K in pre-seed funding.
- Present investment memo to IC and the rest of the members; invested in 2 companies in Fall 2020.
- Lead preparation for case studies with professional VCs; past speakers include partners from CRV and NEA.

PROJECTS

Iowa Home Price Prediction – *Machine learning regression using ensemble models* Jan 2021 - Present

- Used Python to organize 1460 data entries, each with 36 explanatory variables, and store them in a pandas dataframe.
- Implemented a data pipeline with sklearn to apply one-hot-encoding to categorical variables and impute missing numerical values.
- Trained both a random forest model using sklearn and gradient boosted trees using XGBoost. Achieved an average error of <8.8% on the test dataset (on average, model predictions were off by less than 8.8% from the real home prices).

Currency Arbitrage Bot – *Detects cycles in forex rates that exhibit pricing inefficiencies* Aug 2020 - Present

- Built a modified bellman-ford algorithm in C++ to detect negative cycles, corresponding to currency cycles that are mispriced and present a temporary arbitrage opportunity. Added a greedy algorithm to find the most profitable such arbitrage opportunity.
- Used Python to get real-time quotes via a REST API. Linked Python program to the C++ program by using the subprocess library and GNU make. Cached quotes using pickle, the Python library, to boost speed.

Dynamic Epidemic Modeling – *Applied math research project on simulating epidemics* Jun 2019 - Aug 2019

- Designed and implemented a novel epidemic simulation model based on flow networks with C++ and R.
- Used model with a dataset of 70M cell-phone movement records to simulate outbreaks in an entire city.
- Conducted project under Dr. Alex White and gave a presentation at Texas State University (see here).

SKILLS, ACTIVITIES, AWARDS & INTERESTS

- Languages: Fluent in Mandarin.
- Technical Skills: C, C++, Python, Java, MATLAB, Mathematica. Git, Linux, Machine Learning (scikit-learn, pandas, XGBoost).
- Activities: Princeton Math Club, Data Science Club, Julis-Rabinowitz Center for Public Policy & Finance.
- Awards: USA Computing Olympiad Finalist (top 25 nationally), Google Code Jam Round 2 Qualifier, Facebook Hacker Cup Round 2 Qualifier, American Invitational Mathematics Exam (AIME) Qualifier, National Merit Finalist, Eagle Scout.
- Interests: Electronic Music Production, BBQ, Table Tennis, Golf.