

EDUCATION

Postgraduate Research Fellow

Economics / Finance / Experimentation

Stanford University

Graduate School of Business

Jul. 2019 - Jun. 2021

Stanford, CA

- GPA: 4.0 | PhD Coursework: Statistics, Econometrics, Machine Learning & Causal Inference

B.S. Mathematics & Economics

Double Major

Arizona State University

College of Liberal Arts and Sciences

Aug. 2015 - May. 2019

Tempe, AZ

- GPA: 4.0, Summa Cum Laude | Awards: Mouer Award(4.0+); Top Seniors in Mathematics & Top Juniors in Mathematics

PROFESSIONAL EXPERIENCE

Software Engineer & Data Analyst

Product Analytics / Operations

Unqork, Inc.

Investors: Capital G, and Goldman Sachs

Jul. 2023 - Present

Remote

Software Engineering

- Built a web app with Svelte, SvelteFlow (xyFlow), and MongoDB to visualize client application dependencies, enabling component search, problem identification, and refactor opportunities—considered for release as a product feature.
- Proposed an alternative architecture to the CTO, VP of Engineering, and Principal Architects, targeting a 20-fold reduction in application load times and a decrease in operational costs.
 - Suggested precompiling the JSON no-code specification to a web framework instead of using a runtime.
 - Recommended precompiling assets to their final form, sending pre-generated HTML and CSS to the client and hydrating with React.
- Built a transpiler using Rust to convert generic HTML pages into a custom JSON no-code specification, that could then transpile to React (Next.js) and Svelte (SvelteKit).

Data Analyst

- Engineered ETL pipelines, developed insights, and created Tableau dashboards to attribute AWS and Azure costs to specific clients and services, helping surface over 5.5% in annual cloud savings for Senior Leadership.
- Led technical interviews for the Lead Data Analyst position.
- Collaborating with engineers to develop a performance monitoring dashboard using observability metrics derived from AWS ELB logs and Datadog, enabling the identification of performance regressions before client P1s are raised.
- Prompt Engineering for the flagship Formula Building feature.
- General Dashboarding and Adhoc SQL queries to inform product decisions
- Created ETL pipelines for data used by various teams at the company, such as Finance for financial reporting.

Full-Stack Data Scientist

Alpaca - Retail Sales

Sonova

Audiological Care US

Apr. 2022 - Feb. 2023

Remote

Software Engineering

- Designed and developed a geotargeting mapping application with TypeScript, Leaflet, Vue.js, and MongoDB, enabling precise identification of areas with hearing difficulty at the census tract level.
- Led a review of third-party contractor work to verify source data integrity, recommended improvements to source code and documentation practices, and presented contingency plans to executives.

Data Science

- Advocated for a "data democratization" mindset, promoting greater transparency, accessibility, and data usability.
- Implemented a cross-functional Data Science approach, reducing analytics turnaround time from one week to same-day by collaborating closely with executives and stakeholders.
- Collaborated with a cross-functional team to increase sales capacity, achieving a 10% (\$1M) increase in pilot clinic revenue.
 - Estimated the impact using Causal Inference techniques (Diff-in-Diff with Bayesian IPW using the DRDiD package)
- Built a well-documented data warehouse/data lake in Azure with dbt, Prefect, and Airbyte, enhancing data reliability and reducing our reliance on third-party partners.
- Developed dashboards using PowerBI, including a report presented to executives comparing PowerBI and Tableau.
- Developed predictive models for KPIs using scikit-learn, and XGBoost.
- Prototyped a sales prediction model using fast.ai, leveraging patient audiograms to enhance sales targeting efforts.
 - Experimented with computer vision techniques and translated audiograms into matrix representations for improved model accuracy.

Research Fellow

Economics / Finance / Experimentation

Stanford University

Graduate School of Business

Jun. 2019 - Jun. 2021

Stanford, CA

- Worked on Economics, Finance, and Experimentation research with Dr. Susan Athey, Dr. Paulo Somaini, and Dr. Matteo Maggiori.

Dr. Susan Athey

Sep. 2020 - Jun. 2021

- Developed an API with Python & Flask for an adaptive experiment (multi-armed bandit) using Facebook chatbots, 10,000+ individuals treated by a contextual linear model using Thompson Sampling. Deployed with Heroku & Docker.
- Maintained the API's functionality and ensured its continued efficacy throughout the experimentation phase.
- Authored comprehensive internal documentation, including a wiki, blog post, and GitHub repository guides.
- As TA for Dr. Susan Athey's MBA course, I guided MBA students in designing, running, and analyzing experiments.

Dr. Paulo Somaini

Jul. 2019 - Jun. 2021

- Streamlined the process of generating research project assets, allowing multiple projects to spawn from the same source code, including write-ups, data construction, analysis, and publication-worthy graphs and charts.
- Conducted data analysis to generate hypotheses about the dialysis market, directly leading to models in research papers.
- Analyzed CMS Dialysis data using STATA, R, and MATLAB on high-performance computing Linux clusters
- Created detailed geospatial visualizations using ArcGIS.
- Maintained code to implement Gibbs Sampling in MATLAB and JAGS.
- Merged and cleaned multiple raw datasets to construct high-quality datasets used in Gibbs sampling for a research paper on estimating constrained demand in the dialysis market.

Dr. Matteo Maggiori

Jan. 2020 - Sep. 2020

- Designed and implemented automation solutions to streamline data acquisition, eliminating manual tasks and significantly improving research efficiency.
- Automated the downloading of the entire data universe of insurance companies, eliminating the need for two full-time research assistants and greatly enhancing data acquisition efficiency.
- Achieved significant time and resource savings by automating the mass download of insurer asset holdings datasets.
- Leveraged APIs, including Bloomberg's OpenFIGI, to automate the download of diverse datasets.

Research Assistant

Arizona State University

Jan. 2018 - May. 2019

Dr. Bart Hobijn

Economics Department

Tempe, AZ

- Converted complex economic models into functional code using Python and MATLAB.
- Created a Python application to download, manipulate, and visualize data from the Survey of Professional Forecasters and the FRED database, producing stylized plots for effective data presentation.
- Successfully migrated Christopher A. Sims' GENSYS code for solving linear rational expectations models from MATLAB to Python.
- Developed Python code to solve a search and matching model.

TECHNOLOGIES AND SKILLS

- **Programming Languages:** Python (7 years), TypeScript/JavaScript (4 years), Rust (2 years), R, SQL, Java, STATA, MATLAB
- **DevOps:** Docker, git, GitHub Actions (CI/CD)
- **Cloud Deployment:** Microsoft Azure, Netlify, Heroku, Cloud Functions

Web Development

- **Front-end:** Svelte, Vue.js/Nuxt.js, React/Next.js, Tailwind, CSS(SCSS), HTML
- **Backend-end:** Node.js, Express.js, Flask, Serverless Functions, Rest APIs, Linux

Statistics/Econometrics

- **Causal Inference:** Propensity Score, Matching, IV, RDD, HTE, ML Methods
- **Panel Data Methods:** Difference-in-Differences, Synthetic Control, FE
- **Statistics:** Hypothesis Testing (Classical and Bayesian), Statistical Inference (Classical and Bayesian), MCMC Methods
- **Research Design:** Adaptive Experiments, Multi-armed bandits, A/B Testing, Hypothesis Testing, Pre-analysis Plans

Data Science

- **Libraries:** Kedro, Pandas, Polars, MLflow, scikit-learn, fast.ai, XGBoost, Numpy, SciPy
- **Skills:** Forecasting, Data Analysis, GLM, Classification, Dim Reduction, Clustering, Ensemble Methods, Regularization, Random Forests, SVM, Neural Networks, Naive Bayes
- **Visualization:** Tableau, Power BI, Matplotlib, Plotly, Seaborn, arcGIS

PROJECTS

adaInference

Closed Source Until Beta

Present

Adaptive Experimentation Made Easy

- Building a general pipeline for running experiments with adaptive inference.
- *Had development credits provided by AWS*

GOALS:

- Modular Design
- The hope is for someone to be able to start up the pipeline in 1-2 hours.
- Minimize cost of deployment

Python

Knowledge Box

Closed Source Until Beta

Present

A personal Search Engine

- Search your personal "knowledge base" using natural language. Utilizes sentence embeddings and a vector database.

React/Rust/TypeScript

Personal Website

Portfolio and Blog

2021 - Present
Astro/Svelte/TypeScript

Stripe Subscription Verification Bot

Freelance

Dec. 2021
TypeScript

Discord Bot

- Built a subscription verification bot using Node.js, OAuth 2.0, the Stripe API, and the Discord API.

Repositories of Dead Projects

All Time

- Check out my [GitHub Profile](#) for a list of all my dead projects.

RELEVANT COURSES

Statistics

- Machine Learning & Casual Inference - Susan Athey - Stanford [Graduate Course] [P]
- Machine Learning - CS229 - Stanford [P]
- Stochastic Processes [A+]

Mathematics

- Intermediate Real Analysis 2 [A+]
- Intermediate Real Analysis 1 [A+]
- Group Theory [A+]
- Intro to General Topology [A+]
- Applied Linear Algebra [A+]

Economics

- Intermediate Econometrics 2 - Guido Imbens - Stanford [Graduate course] [A-]
- Microeconomic Analysis 1 [Graduate course] [B+] - **Taken as undergraduate**

STUDYING

Economics

- Quantitative Finance (Actively Studying)