Jiaru Cai

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Goal

Preparing myself for a software engineer role involving my expertise in both Computer Science and Economics

Education

University of California, Davis — **Davis, CA**
Bachelor of Economics, with a track in Behavior and Strategy — June 2020
Minor in Computer Science — GPA: 3.78

Programming Skills (*fluent, ^intermediate, +beginner)

*Stata, *MATLAB, *Python, *Java, *Prolog, *NumPy/Pandas, ^SQL, ^Tableau, ^Excel, +R, +HTML, +AMPL, +Tableau

Project Experience (Sources available upon request)

Connect-4

- Personal project; A familiar game everyone plays when we are young, but how to actually build a strong AI to play against any possible player with a winning probability larger than 98%? Here, I implemented alpha-beta mini-max pruning search with an evaluation function to play against a strong player, MonteCarloAI;

A-star search algorithm to climb Mt. St.Helens

- Personal project; How can we achieve the shortest path to climb Mt. St.Helens with the least cost? This project inspires me to come up with an A-star search algorithm from Dijkstra with the most ideal heuristic function;

Enigma

- Personal project; Use array, permutation and loops to unlock the secret of enigma;

Deques

- Partner project; Object-oriented data structures, Interface and Testing;

BearMaps

- Partner project; a web mapping application to figure out the shortest path, high time pressure but finished with a high grade with extra credit.

Work Experience

Yu Ying Learning Center — **Alameda, CA**
Data specialist and Technology developer — January 2019 – May 2019

- Worked on school data to analyze business trends and monthly profits, design creative curriculum, class size significantly increased up to 50%
- Worked as a technology developer of SOLIDWORDS for Kids class, Lego class, Scratch class, and Code Combat class in JavaScript

Languages

English (Fluent), Chinese (Native, Mandarin, Cantonese, Hokkien), Spanish (Beginner)

Related coursework

Data Structures; Applied Econometrics; Machine Learning; Artificial Intelligence; Computational Linguistics; Introduction to Computer programming for Scientists and Engineers; Industrial Organization; Real Analysis; Neuroeconomics & Decisions; Probability and Statistics; Principles of Management; Transportation Economics; Behavioral Economics and Strategy; Natural Language Processing.

Research Experience

Lawrence Berkeley National Lab, Energy Analysis & Environmental Impact Division — June 2018 – August 2019
Research Assistant

- Developed a predictive model to project energy usage based on provincial economic indicators;
- Collected multidimensional data on the Chinese energy market by scraping the web; Conducted mathematical and statistical analyses using econometrics tools and machine learning tools; All five factors had significant results.
- Worked in fast-paced postdoc research lab and was selected for the position out of Professor Villas-Boas' all 19 mentees; Results published as a paper, https://www.mdpi.com/1996-1073/12/13/2581

Sponsored Projects for Undergraduate Research — May 2018 – June 2018
Research Assistant

- Evaluated the relationship between gun crime and birth rates panel dataset in the local community
- Experimented with different regression models to predict future gun crime trends
- Worked with my professor Sofia Villas-Boas and her mentees, didn't get to run hypotheses testing at the end due to the short-term program, but was the first meaningful research attempt

Work Authorization

Yes, STEM major, 3-year OPT