ZHIYUAN "PAUL" ZHOU

developer & researcher

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EDUCATION

Brown University Expected May 2023
Sc.B. Applied Math - CS   GPA: 4.0/4.0

Affiliated HS of SCNU June 2019
High School Diploma   SAT 1580

ACHIEVEMENTS

- National 227th (**top 5%**) in **Putnam** 2019, **top 2** at Brown
- **2nd** Place in Hartshorn-Hypatia Math Contest
- **Finalist** in High School Mathematical Contest in Modeling (HiMCM)
- Regional **top 10** & international **top 100** in Physics Bowl
- Provincial **top 1%** in Chinese Physics Olympiad
- **Top 5%** in AMC12 & qualification for AIME
- Brown UTRA research scholarship
- only recipient of PROMYS Yongren Full Scholarship (2018)

COURSEWORK

Collaborative Robotics (graduate level)
Reinforcement Learning (UCL online)
Intro to Computer Systems
Deep Learning
Intro to Functional Programming
Intro to Object Oriented Programming
Computational Probability & Statistics
Statistical Inference
Applied Ordinary Differential Equations
Honors Linear Algebra
Honors Calculus

SKILLS

- **Programming Languages:** Python · Java · C · HTML/CSS · LaTeX · Scala · MATLAB · C# · ReasonML · Pascal · Racket
- **Design & Games:** Unity · Adobe InDesign · Adobe After Effects · WordPress

INTERESTS

- competitive badminton
- ballroom dancing
- cycling
- guitar

CS PROJECTS

Cha-Ching | Personal Project ⊙   📅 August 2020

- an autonomous **Java** trading bot that trades intelligently in a simulated stock market using Stochastic Oscillator, Exponential Moving Average, and other technical indicators to buy low and sell high
- implemented visualization of the paper trade using JFreeChart

Search | Course Project   📅 May 2020

- a search engine in **Scala**: an indexer that uses **term frequency** and **PageRank** algorithm to index a Wikipedia corpus & a querier that parses free text queries and return most relevant documents

Recommender | Course Project   📅 April 2020

- a **Java** program that can parse generic data sets that indicate preferences, generate **Decision Trees**, and use the trees to make intelligent predictions on unseen data according to preferences exhibited in the data set

Connect4 Solver | Course Project   📅 Dec 2019

- a general purpose AI that can play any two-player, sequential, finite-action, deterministic zero-sum game with **Minimax** algorithm and **alpha-beta pruning**
- created a connect4 AI player in **ReasonML** that won 1st place in class tournament of 200 people

RESEARCH

Undergraduate Researcher   📅 June 2020 – Present
Paradiso Lab, Brown University   📍 Providence, RI

- Invented 3 real-time **video object recognition** post-processing models in **Python** for use in a vision prosthetic headset that helps the visually impaired
- Increased average recognition confidence by over 50% by incorporating temporal information from **Inertial Measurement Unit**
- Employed **Kalman Filter**, Intersection over Union method, and quaternions in said models, and built an interface for connecting the models with **YOLO**, a popular object detection network

    🔗 Paper   ⊙ Code

Undergraduate Researcher   📅 Jan 2020 - May 2020
Humans to Robots Lab, Brown University   📍 Providence, RI

- Developed a **C#** API in **Unity** that enables robots to navigate more accurately by providing hand gesture signals to corroborate Natural Language commands
- Connected the **IBM Watson Speech to Text** API to a **CopyNet**-based neural network, which uses **fastText** to do **Natural Language Processing** and finds the destination on the map described by NL commands
- Inputted hand gestures using **Vive** headsets and laid groundwork for implementation of the API in **Virtual Reality**

    🔗 Demo   🔗 Paper   ⊙ Code

WORK EXPERIENCE

Ecommerce SEO Intern   📅 June 2019 - July 2019
Panlelo Inc.   📍 Guangzhou, China

- Designed and created a brand-new website using **WordPress** to promote company products online
- Learned and conducted Google **Search Engine Optimization** on the new website
- Optimized and maintained company social media promotional account and uploaded short videos to attract internet traffic for product promotion