Vincent Zhao

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Programming Languages: Python, Java, JavaScript, TypeScript, HTML, CSS, Dart, R, SQL, C, Swift
Frameworks: ReactJS**,** Tensorflow, NumPy, pandas, Express, Flutter, NextJS, React Native, Electron, Node JS, pytest, JUnit
Technologies: Git, Fusion 360, Firebase, OpenCV, ROS, Linux, Unix, GitHub, Google Cloud, REST API, Docker, MongoDB, Redis

EDUCATION:

Purdue University, West Lafayette Graduation: May 2026
B.S. Computer Science Major; Math Minor GPA: 3.96
Relevant Courses: Multivariable Calculus, Discrete Math, Linear Algebra, Computer Architecture, Data Structures & Algorithms, Statistics, Systems Programming, Software Engineering, Analysis of Algorithms, Intro to AI, Real Analysis

WORK EXPERIENCE

New EIC May 2024 - August 2024
Software Engineering Intern *Remote*

- Developed JWT authentication workflow for internal training application with ExpressJS and React Native.
- Implemented multilingual support using i18next, including developing scripts to scan for and translate all text elements.
- Created frontend for screens from Figma designs with calls to MongoDB server for data to hydrate screens.

Indiana State Chemist February 2024 – Present
Software Developer *West Lafayette, IN*

- Implemented forms used by over 300 inspection agents to collect data on pesticides, feeds, and other similar products.
- Redesigned barcode input to handle EAN-8, UPC-E, and EAN-13 codes rather than just UPC-A
- Developed custom media viewer that handles audio, video, image, and documents with rotation and magnification features
- Wrote a RESTful Python file server with hooks to convert files of irregular image types to JPG and transcribe audio.
- Implemented audio transcription with parallel computing through cuda to improve transcription speeds by 30 times.

NASA Genelab Effort: Space Biology August 2023 – May 2024
Researcher *West Lafayette, IN*

- Analyzed microarray data for over 25k genes across 5 space flights for evidence of photorespiration in spaceflight with R.
- Visualized changes in expression of proteins coded for by genes in different plant pathways using the KEGG database
- Used AraCyc and SUBA-5 databases to map extreme gene expressions to photorespiration pathways and organelles

Purdue IEEE ROV Team August 2023 – Present
Computer Vision Engineer *West Lafayette, IN*

- Created detection algorithms identifying pieces of underwater structures independent of background
- Wrote program to aspect ratio of rectangular surface in real world from irregular quadrangle identified in image
- Developed opencv program for measuring side lengths of rectangles of known width to 0.04 m accuracy

PROJECTS

NY Times Crossed | Github | (Python, Kaggle, NumPy, pandas, sentence transformers)

- Wrote solver scripts and models to solve NY Times daily games including Connections, Wordle
- Solves Wordle with a 91% success rate, using frequencies of letters in the words list to optimize solving the wordle
- Solves Connections by calculating word embedding similarity across different meanings of different words
- Optimized grouping algorithm to have a first connection rate of 60% and a puzzle solve rate of 17%

Emotional Oranges | Github | Website | (Tensorflow, Python, Kaggle, ReactJS, Firebase, Express, NumPy, pandas)

- Wrote a React front end for the project which took an image uploaded by the user as well as their listening data to generate a Spotify playlist based on the mood detected in the image with songs that fit the mood in the user's taste profile
- Trained Sequential Layers model to detect the mood of an image using a Kaggle dataset with 88% accuracy
- Designed Express server to manage authentication for OAuth to gain access to user data from Spotify's REST API
- Wrote cloud functions to preprocess images for speed and model usability by compressing, grayscaling, and resizing.

My Student Sidekick | Github | Website | (ReactJS, Firebase, Figma, NodeJS)

- Collection of student tools including schedule, citation machine, note taker, and grade calculator
- Wrote a Node JS script to scrape websites for citation information by looking at metadata hosted on a firebase
- Utilized pub-sub cloud function to check the time and send user notifications through the browser based event timing