# 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, JWT
**Technologies:** Git, Firebase, OpenCV, Linux, Unix, GitHub, Google Cloud, REST API, Docker, MongoDB, Redis, PostgreSQL

## 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

**Jakarta Crossword Bank** | [Github](#) | [Website](#) | (Python, pandas, sentence transformers, JWT, ReactJS, PostgreSQL)

- Developed full-stack crossword clue bank app with JWT-based authentication for secure user access to modifying clues
- Implemented RESTful Flask API endpoints with database queries for frontend to interact with database
- Integrated semantic search using sentence transformers into crossword bank to allow for users to easily find similar clues
- Dockerized and created docker compose for React and Flask application for easy deployment onto Google Cloud

**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%

**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