John Zeng
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EDUCATION

Purdue University   West Lafayette, IN
Bachelor of Science   *Expected May 2026*
- Double Major: Computer Science & Artificial Intelligence
- SAT: 1520
- Coursework: Data Mining and Machine Learning, Intro to AI, Analysis of Algorithms, Data Engineering in Python

EXPERIENCE

Computer Vision Researcher   March 2024 – Present
Digital Enterprise Center   *West Lafayette, IN*
- Problem: In assembly lines that employ human technicians, foreign objects (tools, drill bits, etc.) can be left behind, causing damage to machinery and products.
- Leading a team of two to build a program that identifies when foreign objects are left behind and notify the operator by **uptraining** the **YoloV8 computer vision** model.
- Implemented an automated documentation process to enhance clarity for future developers by leveraging **GitHub Actions** and **Pages** to maintain an up-to-date, accessible API documentation site.
- Developing an interactive GUI using **Rust**, **Tauri**, and **Svelte** to display camera input from three sources as an orthographic projection.
- Optimize frame rate by leveraging **asynchronous runtimes** to process camera inputs in parallel.
- Utilized multiprocessing **image augmentation** to generate synthetic data, effectively addressing the challenges posed by a short-staffed team.

Head Teaching Assistant for Advanced + Regular Programming   Summer 2024
The Harker School   *San Jose, CA*
- Taught lessons in memory allocation, object and data-type basics, recursion, and coding standards.
- Provided clarification to junior TAs for ambiguous assignment instructions and grading rubrics.
- Led review sessions to explain frequently missed test questions and difficult concepts.

Teaching Assistant for Advanced Programming   Summer 2023
The Harker School   *San Jose, CA*
- Tutored students in object-oriented-programming and Java fundamentals.
- Graded paper exams as well as projects.

Investment Analyst Intern   Summer 2022
Draper Dragon   *San Mateo, CA*
- Researched **metaverse/blockchain gaming** space and presented to general partners about the nuanced differences in industry leaders' platform designs along with their respective drawbacks and benefits.
- Wrote two investment memos detailing company financials, market opportunity, risk factors, platform/product description, competition, valuation, company history, and team history.

PROJECTS

Rugby Drill Simulator | *Textual, Python*
- Building a TUI that simulates a rugby passing drill based on user controlled parameters.
- Tracks player oscillation between lines with the goal of discovering a formula to yield 0 oscillations over 200 passes.

Shell | *Lex, Yacc, C++, CMake*
- Created a shell interface capable of executing commands with **subshell**, if/while statements, script execution, and **wildcarding** in addition to all basic terminal functions like **pipes**, environment variables, and **file system traversal**.

Git Tutorial | *Markdown*
- Educated inexperienced developers on the basics of Git
- Covered topics such as cloning, branching, committing, and pushing.
- Provided examples of and solutions to common problems like **merge conflicts** along with links to further research.

TECHNICAL SKILLS

Languages: Python, SQL, Rust, Java, Svelte, C, C++, HTML, CSS
Frameworks: Textual, Tauri, Qt, Ultralytics, Tensorflow/Keras, Pytorch, ClearML, NumPy
Libraries: OpenCV, Imgaug