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

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.
- Utilized multiprocessing **image augmentation** to generate synthetic data, effectively addressing the challenges posed by a short-staffed team.
- 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 **PySide** and the **Qt** framework to display camera input from three sources, as an orthographic projection. The interface enables users to select regions of interest for each camera view, within which the computer vision model detects foreign objects.

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 physical 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 statements, while loops, script execution, and wildcarding in addition to all basic terminal commands 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 common problems like merge conflicts and possible solutions along with links for further research.

Technical Skills

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