

Zachary Huang

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Education

California Institute of Technology, Pasadena, CA (Class of 2026)
B.S. of Computer Science GPA: 4.2

- Involvement: TA for CS 13 (Mathematical Foundations of Computer Science)
- Relevant Coursework: Software Design, Algorithms, Decidability and Tractability, Systems Programming, Machine Learning, Discrete Mathematics, Linear Algebra

Spring Valley High School, Columbia, SC (Class of 2022)
Valedictorian (rank 1/452) GPA: 4.0

Research

Image Plane Corrections for the OVRO-LWA (2024 - present)
Owens Valley Radio Observatory Software & Algorithms Lab
Researching image-plane correction algorithms and applying them to the Owens Valley Radio Observatory Long Wavelength Array (OVRO-LWA) telescope, which images the entire visible sky using radio frequencies.

A Type Checker For Mathematical Proofs Written in LaTeX (2023)
Caltech Summer Undergraduate Research Fellowship
Implemented a tool for identifying type errors in discrete math proofs written in LaTeX (meant to be used in Caltech's CS 13). Mentored by Professor Adam Blank of Caltech.
[Paper & Source Code](#)

Personal Projects

zhuang.dev: A personal website where I host blog posts, guides, and summaries of my various projects

caltech.dev: An open source course explorer/scheduler for Caltech students

- Used Python for data scraping and TypeScript/React for an interactive UI
- Collaborated effectively with two other Caltech students using version control

ZPCalc: An interactive, programmable RPN calculator inspired by Forth and Lisp

- Implemented a variety of math operations along with programming constructs such as conditionals, looping, functions, and metaprogramming.

OScheML: An implementation of the Scheme programming language in OCaml

- Learned about parsing, lexical environments, and tree-walk interpreters

Open-Source Contributions

Passerine: a concise, extensible functional scripting language powered by Rust

- Refactored the core parser used by the language

MacPorts: an open-source package management program for MacOS

- Added and updated various packages in the ports tree

Honors & Awards

Caltech SURF Fellow (2023)
National Merit Scholarship (2022)
USACO Gold (2021)
AIME Qualifier (2021)

Skills

Languages: [Well-versed] Python, C, TypeScript, OCaml, Common Lisp; [Working Knowledge] C++, Java, Rust, Haskell, Julia; [Previous Experience] Lua, Zig, Shell scripting

Tooling: Linux, MacOS, Github, (neo)vim, tmux, git, ssh, L^AT_EX, make, coreutils