Alex Straight

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Summary

As a third-year Computer Science major at San Diego State University, I am deeply engaged in technology and software development, with a rich background in tutoring math, computer science, and physics. My research focuses on enhancing Non-Orthogonal Multiple Access (NOMA) systems through Python algorithms and Reconfigurable Intelligent Surfaces, with results detailed in my portfolio. I had the pleasure of being able to present this research at Society for Advancement of Chicanos/Hispanics and Native Americans in Science (SACNAS).

I've also built a React-based pathfinding visualizer, an AI powered math tutor/note taking app, along with some other notable projects:
https://github.com/AjStraight619?tab=repositories

Experience

Research Assistant
San Diego State University
Jun 2023 - Aug 2023 (3 months)
Spearheaded a pioneering study on optimizing Non-Orthogonal Multiple Access (NOMA) systems through the integration of Reconfigurable Intelligent Surfaces (RIS), enhancing data transmission rates significantly.
Devised and executed complex Python algorithms to simulate RIS-empowered NOMA environments, achieving improved channel capacity and signal strength in various deployment scenarios.
Analyzed the impact of phase shift adjustments on RIS elements, quantifying improvements in data rates and providing a scalable model for dynamic system configurations.
Conducted extensive computational experiments, leveraging numpy and matplotlib, to visualize data rate optimizations and validate theoretical models against simulated outcomes.
Authored robust code for processing complex channel matrices and signal patterns, resulting in a versatile toolkit for further NOMA-RIS research and development.

Software Engineer
Oak Outlet Plus
Oct 2023 - Present (3 months)
https://oak-outlet-plus.vercel.app/

I developed a sleek and responsive website for Oak Outlet Plus, a premier kitchen remodeling firm. Leveraging the robust features of Next.js, I implemented server-side actions to enhance user experience and efficiency. The integration of MailGun streamlines communication by ensuring both potential clients and the company owner promptly receive detailed remodel inquiries and quotations. For a cohesive and professional user interface, I utilized Radix UI components, ensuring a consistently styled and visually appealing online presence for the brand.

Software Engineer

Note Genius

Jul 2023 - Present (6 months)
Currently in Production
https://notegenius.vercel.app/

Note Management: Tagging, searching, and folder organization for notes.
AI Assistance: GPT-4-powered rephrasing, summarization, and note expansion.
Math Solver: Wolfram Alpha integration with GPT-4 explanations.
Handwriting Conversion: Transforms handwritten notes to text via Google Vision API.

Note Export: Supports multiple formats for note exporting.

Tech Stack: Built with Next.js, TypeScript, Prisma; uses MySQL and PlanetScale for scaling.
Incorporates APIs such as GPT-4, Wolfram Alpha, and Google Vision OCR.

Software Engineer

Personal Projects

Oct 2023 - Present (3 months)
https://ajstraight619.github.io/PathfindingVisualizer/

Main Features:

Pathfinding Algorithms: Dijkstra, A*, BFS, DFS, Greedy BFS, Jump Point Search, and Best-first search.
Beam Search is being debugged for enhanced performance.

Interactive Grid: Enables wall and weight creation, and node manipulation through click-and-drag.
Toggle feature for walls/weights included.

User Interface: Simple dropdown menu for algorithm selection and adjustable visualization speeds. A
comparison mode is in development for algorithm performance assessment.

This tool provides an engaging, hands-on approach to learning about pathfinding algorithms with a
focus on interactive learning and usability.

Education

San Diego State University

2023 - 2025

Skills

Next Auth • Prisma ORM • Attention to Detail • Computer Science • OAuth • Next.js • JavaScript
• React.js • Communication • TypeScript

Honors & Awards

Travel Scholarship - SACNAS

Aug 2023

Awarded a travel scholarship, I had the honor of showcasing my research at the prestigious Society for Advancement of Chicanos/Hispanics and Native Americans in Science (SACNAS) conference in Portland, Oregon. This opportunity allowed me to engage with leading figures in STEM and highlight my contributions to the field.

Honor Roll - Community Colleges of Spokane

Apr 2021

Vice Presidents Dean List - Southwestern Community College District

May 2022