

# Alex Straight

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## Profile

Engineer with a passion for blending creativity and technical skills to develop efficient, scalable applications. Skilled in React and Next.js, with hands-on experience on projects such as a multiplayer Pictionary game leveraging Go for real-time WebSocket communication. Currently building a 2D game engine in Zig, dedicated to tackling challenging problems and staying current with industry trends.

## SKILLS

### 📌 TECHNICAL SKILLS

TypeScript	<div></div>
Go	<div></div>
Zig	<div></div>
Next.js/React	<div></div>
Tailwind CSS	<div></div>
HTML	<div></div>
UX/UI	<div></div>
WebSocket	<div></div>
Problem Solving	<div></div>
Git	<div></div>

## Work Experience

📅 03/2024 – 05/2024

### Front-end web developer Academic Assist

- Developed and implemented **SEO** strategies using **Next.js**, which resulted in **improved search rankings** and increased visibility for the website.
- Completely revamped the home page according to **Figma design specifications**, enhancing the overall **user experience** and engagement.
- Utilized **Tailwind CSS** to create a modern, responsive design, which helped the website **load faster** and look great on all devices.

## PROJECTS

📅 PRESENT

### 2D Physics Engine

- Engineered a custom **2D physics engine** in **Zig** implementing the **Separating Axis Theorem (SAT)** for precise collision detection, rigid body dynamics, and **numerical stability systems** with **minimal computational overhead**.
- Implemented comprehensive **debugging visualization** for physical properties including **velocity vectors**, **collision points**, and **sleep**

## PROJECTS

**states**, enabling efficient troubleshooting and **simulation analysis**.

- Designed a **modular architecture** with specialized components for **stability management**, **sleep detection**, and a **clean API** that supports procedural simulation creation and runtime manipulation.

### Pictionary with Friends

- Developed multiplayer **Pictionary game (Go/TypeScript)** with **WebSocket-based real-time drawing capabilities** and **game-state synchronization**.
- Implemented **interactive canvas** with a toolbar using **Fabric.js** for drawing and **Framer Motion** for **UI animations**.
- Created **turn-based gameplay mechanics**.
- Game URL**: <https://pictionary-tan.vercel.app>

### Discord Bot

- Built a **Discord bot in Go** with AI chat, news updates, and real-time sports data using the SportRadar API.
- Implemented **concurrent song queue management**, allowing seamless background music downloads and playback.
- Integrated **cron jobs** for automated tasks and scheduled updates.
- OpenAI** API integration.

## EDUCATION

📅 08/2021 – 05/2025 📍 SAN DIEGO, CALIFORNIA  
**Computer Science | Bachelor of Science**  
**San Diego State University**

- Dean's List (3x)** – Recognized for academic excellence with a **3.8 Major GPA**.
- Pathfinding Visualizer** – Developed an interactive visualization tool for pathfinding algorithms, currently used in a course.
- Research Assistant** – Optimized NOMA systems with IRSs using the BFGS algorithm to enhance signal data rates.
- Teaching Assistant** – Data Structures & Algorithms.