Andy Ye

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EDUCATION

Georgia Institute of Technology Atlanta, Georgia
Bachelor of Science in Computer Science, GPA: 4.00 Expected May 2026
Clubs and Activities: RoboJackets, Web Dev @ GT
Relevant Coursework: Differential Equations, Object-Oriented Programming, Linear Algebra, Multivariable Calculus, Computer Modeling Algorithms, Computer Architecture, Software Development, Data Structures and Algorithms

EXPERIENCE

High Oaks Robotics Naperville, Illinois
Team Member Sept 2022 – May 2024

- Designed and assembled several complex, competition-ready robots meshing various components together such as multi-stage lifts, advanced intake mechanisms, precision claws, and integrated visual/encoder-based odometry systems.
- Leveraged 3D printing (onShape), CNC, and Laser Cutters to manufacture intricate custom parts, ensuring seamless compatibility with existing mechanisms.
- Developed effective control algorithms for holonomic autonomous robot navigation via guided vector fields while minimizing path deviations through linearized quadratic regulators.
- Performed accurate localization based on visual, IMU, and dead wheel encoder readings on SE2 lie group with a variation of unscented Kalman filters.

PROJECTS

Doodlah | doodluh.andyy.dev | github.com/idke64/doodluh 2023 – 2024

- Developed a real-time collaborative drawing application using SvelteKit and TypeScript, implementing a custom canvas-based system supporting features such as free-drawing, erasers, shapes, and live cursor tracking.
- Built collaboration infrastructure using Socket.IO websockets for synchronized state management across clients supported by a backend for board and user management built with PostgreSQL and Drizzle ORM and secured through cookie-based authentication.
- Self-hosted the containerized application on a home server with Docker, secured and exposed to the web via Cloudflare Tunnels.

CodeBytes Website | codebytes.codes | github.com/idke64/codebytes 2023 – 2024

- Designed a responsive, full-stack web application serving as both an event platform and a competition portal utilizing NextJS, React, and TailwindCSS, including integrated authentication, data management, and real-time contest rankings provided with Firebase.
- Implemented a robust submission and judging system supported by a REST API, featuring immediate feedback, access to past submission details, and a built-in code editor that supports 10 languages.
- Deployed highly-available, self-hosted, Dockerized backend judging server via CloudFlare Tunnels, incorporating worker processes to handle multiple requests concurrently.
- Created a flexible Markdown-based content structure with MDX to dynamically display blog posts and general information.
- Contributed to the design of 30+ algorithmic programming problems, along with custom generated test cases and constraints

Gnomon Learning Website | gnomonlearning.org 2023 – 2024

- Engineered an innovative learning platform using NextJS, React, and TailwindCSS that provides information about tutoring services in an aesthetically pleasing user interface.
- Leveraged Firebase database and authentication functions, allowing for the creation and sharing of user-generated quizzes.

Gameboy Emulator in Rust | github.com/idke64/gameboy-emulator-rust 2024

- Implemented complete LR35902 instruction set with around 511 opcodes and cycle-accurate emulation of the Gameboy's Pixel-Processing-Unit (PPU) and CPU.
- Enabled support for loading and running Gameboy Read-Only-Memory (ROM) files.

Car Simulation powered by Neural Networks and Genetic Algorithms | github.com/idke64/car-evolution 2023

- Developed autonomous car simulation using Python and Pygame, utilizing neural networks for decision-making and a genetic algorithm for evolutionary training.

Additional Skills

Technical Skills: HTML/CSS, JavaScript, Python, C/C++, Java, Rust, ReScript, Firebase, TypeScript, React, NextJS, ExpressJS, TailwindCSS, Markdown, CAD, REST APIs, Git, Svelte, Sveltekit, Cloudflare, Mathematica, LaTeX
Languages: Fluent in Cantonese, English; Conversational Proficiency in Mandarin