Vincent Chang

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Work Experience

Droxo Tech - Software Developer — Jan. 2021 - Jul. 2022

Golang/TypeScript/MongoDB/React/ROS — *Tainan, Taiwan*

Fluid Storage Tank Inspection Robot

- Designed and implemented the fluid storage tank inspection robot's data logging and ground monitoring system. Collaborated with the embedded system engineer to extract and stream vital information to a remote computer using a **WebSocket** server written in **Golang**; Also responsible for designing data storage using **MongoDB** for the measurement data for future analysis.
- Designed and built the cross-platform GUI using **TypeScript** with **React** and **Electron.js** for the ground monitoring application for the inspection robot operator.
- Collaborated with the third-party instrument manufacturer to use the **RESTful APIs** to integrate the measuring instrument with the inspection robot system to allow the operator to observe the measurements from a distant location. Helped the instrument distributor complete the documentation for the instrument APIs benefiting future users of the instrument.

UAVs

- Retrofitted new features designed and built from the ground up into existing agricultural UAVs with ROS (robot operating system a middleware with a pub/sub model; developed peripheral nodes in C++). Features include adjustable spraying patterns based on geolocations determined by NDVI scans (to analyze the growth of certain weeds) to minimize the amount of pesticide applied.
- Implemented a precision landing system for UAVs using the onboard camera with arUco Tags to minimize the margin of error when landing a UAV at specific locations.
- Automated mundane tasks by developing an application using **Node.js** for parsing binary flight logs from third-party UAVs into JSON format and uploading them to government-hosted APIs; the task is scheduled regularly using cron.

Magpie Tech Corp. - Support Technician — Feb. 2019 - Sept. 2019

Los Angeles, CA

Education

Purdue University - B.S. Mechanical Engineering — Aug. 2014 - Dec. 2018

West Lafayette, IN

Started taking courses within the CS curriculum as technical electives. Followed the track for CS minor including data structure and algorithms, discrete math, etc. This is where I built a solid foundation for future endeavor in the CS field.

Technical Skill

Programming Related

- Language: Java, C/C++, JavaScript/TypeScript, Golang, Python, PHP, HTML, CSS
- Library/Framework: Express.js, Django, React, Electron.js, GraphQL
- Version Control: Git
- Unit Test: Mocha, JUnit, Jest
- Database: PostgresSQL, MongoDB

Language

- Chinese/Mandarin: Native
- English: Fluent

Personal Side Project

Web Based Horse Racing Simulation Game

- HR Physics Simulation: A simplified physics simulation implemented in python.
- HR Graphql Server: A GraphQL server implemented in golang using gqlgen library. This graphql server serves as an API endpoint for querying complex data regarding race horses. (e.g. the pedigree of a race horse) Live Demo
- HR Crawler: A simple crawler implemented in python using BeautifulSoup to parse the HTML pages, the crawler scrapes real world race horses data from a Japanese website netkeiba.com
- HR Racetrack Maker: An editor used to create race tracks that can be used in the physics engine mentioned above to simulate horse races. This is essentially a bezier curve editor. The logic behind different operations is inspired by the 3D modeling software blender. Live Demo
- point2point: A simple TypeScript library used for vector calculations. This is mostly used in the race track maker.