Ziheng Ding

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OBJECTIVE

To apply for a job in robotic industry

EDUCATION

University of Wisconsin-Madison

Master of Science, Electrical and Computer Engineering, Dec. 2024

GPA: to be updated after first semester

Coursework: Embedded Computing Systems (On-going), Digital Circuits and Components(On-going)

Hong Kong University of Science and Technology (HKUST)

Bachelor of Science, Computer Engineering, Jun. 2023

MCGA: 3.31/4.3

Coursework: Introduction to Embedded Systems, Operating Systems, Signals and Systems, Fundamentals of Artificial Intelligence

WORK EXPERIENCE

Ant Yunchuang Digital Technology Co.,Ltd, Beijing, China

Full-time intern / App development, Jun. 2022-Aug. 2022

- Worked in the Ant Technical Division of the Industry Technology Dept.
- Based on SOFA4 framework, participated in the development of the CMO program, focusing on developing the program template for hotel services.
- Implemented several live-in services for customers, such as instant Wifi connection, invoicing reservation, and personal identity verification by scanning QR code.
- Capable to displaying basic information and supporting advertising and promotions of hotels.
- Undertook the work of communication with other teams for sharing developing resource, such as the mocking server.
- Upon the end of my internship, several ISVs and retailers showed interest to the template and the releasing was under planning.

RESEARCH EXPERIENCE

Machine Learning on Wearable Devices,

Supervisor: Prof. Hui Pan, Jun. 2021-Aug. 2021

- Interacted with users and programs on wearable devices through hand gesture recognition.
- Use Axis-Neuron and Unity to collect data from IMUs, and setup gesture detection AI with Python
- Studied the relationship between the number of IMUs and the complexity of hand poses, and conclusion is the following:
    a) Able to detect 80% to 90% of static gestures that does not involve transformation from one gesture to another gesture.
    b) More IMUs does not always lead to better accuracy. When more than 6 IMUs are placed, gestures become less distinguishable from each other.
    c) When more gestures are defined, detection becomes less accurate.

SKILLS

Software: Node.js, React Native, Android Studio, XGBoost, SOFA4 framework

Programming Languages: Python, JavaScript, Java, C++, C

Database: AWS DynamoDB

Hardware: STM32, Arduino

Others: SolidWorks, MATLAB, CubeMX

ACADEMIC PROJECTS

Hiking app development, (Senior Capstone Project)

- Develop a hiking navigation mobile app.
- Implement real-time navigation, map display, route planning with Google Map APIs
- Collect data of blackspots where hiking accidents happened before and implement an alert module that can warn users when they are close to a blackspot.
- Has a user profile system including log-in, user page and backend data storage using Amazon AWS and DynamoDB
- Cooperated with two other teammates to complete the project in two semesters.
- Available for most regions in Hong Kong

Design and implementation of an Omni-directional Quadruped Robot

- Collaborated with team members, finished the designment of a 3D-printed robot that meets the expectation of moving omnidirectionally without turning its body.
- Used UCOSIII real time operating system on STM32 board to control 12 servo motors with three motors on each leg.
- Worked on CPU clock scheduling and multi-threaded processing; built the logic of the control algorithm based on gait analysis to make the 12 motors move synchronously to complete a smooth movement.
- Decided the algorithm's step size is at the beginning of each movement depending on the angle of the movement relative to the starting location; did repetitive tests to meet the project's requirement.

Design and implementation of a propeller car

- Designed a car that was driven by two propellers and was able to advance and turn.
- Remotely controlled the car by an app on my smartphone and established the connection through the Bluetooth.
- Overcame the major obstacles of the work, the limitation of power and material, by the utilize of bearing and balanced the load on wheels; improved the car's performance. Figured out that because the power provided by propellers was weak, the car must be constructed with light enough materials and have as less friction as possible.

Path-search algorithm design

- Finished the path-search algorithm design that can determine the shortest route from two random locations to their respective endpoints in a 256x256 obstructed map scene.
- Within the scenario containing two agents, used bidirectional A* in the code implementation to save computation.
- Meet the computation time limit that generate the path within 1 second.

Application design

- Designing an app that allow the user to control a PC with a smartphone.
- Using a screen mirroring app to project the PC screen to the smartphone.
- Creating a flowing screen window on the smartphone to capture gestural inputs and block the screen mirroring app from receiving the input.