Hao Cheam

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Education

University of Massachusetts Amherst
MS in Computer Science; GPA: 3.6/4.0 *Aug 2018 – May 2020*
Courses: Computer Vision, Machine Learning, Robotics, Artificial Intelligence, Reinforcement Learning, Neural Networks

The University of Texas at Austin
BS in Electrical and Computer Engineering (Honors; Minor in French); GPA: 3.8/4.0 *Aug 2011 – May 2015*

Projects

Pokemon Classifier
- Trained a 7 layer Convolutional Neural Network (CNN) in Python using Keras and Tensorflow on a dataset of about 1400 pokemon images. Obtained accuracy of about 93% over 6 classes
- The dataset was collected using the Microsoft Azure Bing Image Search API

Mini Self Driving Car
- Wrote Dijkstra's shortest path algorithm in Python to solve path planning
- Implemented vision-based lane detection and vision-based PD controller in Python
- Project done on Arduino Uno and Raspberry Pi, in a team of 5 people

Non-Data-Driven Method of Learning Facets in Object Tracking
- Employed SIFT matching and mean-shift tracking on color histogram to track an object
- Facets are stored during tracking to augment the reference image database
- Allows tracking of an object after the object has been reintroduced into the scene while showing a different facet

Blink Detection
- Used dlib's face detector and facial landmark models to localise the face and the eyes
- Computed the eye aspect ratio to determine whether a blink has occurred

Grid Pathfinding with A* and Jump Point Search
- Implemented A* with Jump Point Search in C++ to solve a grid pathfinding problem

High Confidence Policy Improvement (Reinforcement Learning)
- Using importance sampling, produced stochastic policies written in C++ that outperformed the behavior policy for an adaptive insulin advisor

Voice Control of Magic Glass with Alexa
- Using Arduino code, interfaced an ESP8266 microcontroller (MCU) to communicate with Amazon Echo
- The MCU controls a relay that switches the magic glass

Experience

Powerware Systems Selangor, Malaysia
Data Center Engineer *Aug 2017 - Jun 2018*
- Designed and built Data Center Monitoring Systems for temperature and humidity monitoring
- Created shop drawings of electrical panels in AutoCAD, planned cable routing, and built electrical panels
- Tools used: Modbus TCP/IP, BACNET, WAGO controllers, AutoCAD, MOXA controllers

ECE Department, The University of Texas at Austin Austin, TX
Graduate Research Assistant *Aug 2015 - Dec 2016*
- Researched full-duplex radio. Ported MATLAB to C. Worked with USRP Ettus E110
- Focused on Interference Alignment via index coding and rank minimisation

Skills

Programming Languages: Python, C, C++, MATLAB, Java
Frameworks/Tools: OpenCV, PyTorch, Keras, Linux, git, ROS
Languages: Chinese (Fluent), Malay (Intermediate), French (Intermediate)

Certifications

- Business Foundations Series for Scientists and Engineers (8 weeks, Summer 2019)