

# Hao Cheam

<https://www.linkedin.com/in/haocheam/>  
<https://chc442.github.io/>

[hao.cheam@gmail.com](mailto:hao.cheam@gmail.com)  
<https://github.com/chc442>

## EDUCATION

### University of Massachusetts Amherst

*MS in Computer Science; GPA: 3.6/4.0*

*Aug 2018 – Sep 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

### Mini Self-Driving Car

- Built a mini self-driving car using Arduino Uno and Raspberry Pi, for a year-long team course project
- Wrote Dijkstra's shortest path algorithm in Python to solve path planning
- Implemented vision-based lane detection with HSV thresholding in Python

### Deep Learning 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

### Ground Crack Detection

- Used image filtering and Canny edge detection to find cracks in the ground
- Methods used: median filter, bilateral filter, canny edge detector, log of image, morphological filter
- Written in Python using OpenCV

### 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 Switchable Privacy Glass with Alexa

- Designed an embedded system to enable voice control of a switchable privacy glass
- Interfaced an ESP8266 microcontroller in C++ to communicate with Amazon Echo

## EXPERIENCE

### Data Center Engineer

*Powerware Systems*

*Aug 2017 - Jun 2018*

*Selangor, Malaysia*

- Designed and built temperature/humidity monitoring systems as part of a 3 person team
- Created shop drawings of electrical panels in AutoCAD, planned cable routing, and built electrical panels
- Introduced a documentation system for in-house processes, reducing the time spent on knowledge transfer
- Wrote a C++ program to automate the conversion of 64 bit hex to floating point for Modbus application
- Converted a switchable privacy glass to be voice-controlled, increasing the company's marketability

### Graduate Teaching Assistant

*ECE Department, The University of Texas at Austin*

*Aug 2015 - Dec 2016*

*Austin, TX*

- Assisted in teaching an undergraduate Signals and Systems course of about 30 students

## SKILLS

**Programming Languages:** Python, C++, C

**Frameworks/Tools:** OpenCV, PyTorch, Keras, Linux, Git

**Languages:** Chinese (Fluent), Malay (Intermediate), French (Intermediate)

## CERTIFICATIONS

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