

61 Bishop Allen Dr, Apt 2

LUKE SHIMANUKI

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EDUCATION Massachusetts Institute of Technology

2016 - 2020

M.Eng Electrical Engineering & Computer Science (AI Concentration)

S.B. Double Major in Computer Science and Brain & Cognitive Science

GPA: 4.9 (out of 5) overall undergrad, 5.0 in-major (CS), 5.0 graduate

Machine Learning (graduate level)

Robotics Science and Systems

Computational Intelligence (graduate level)

Computational Cognitive Science

Advanced Data Structures (graduate level)

Embedded Systems

Theory of Computation (graduate level)

Design and Analysis of Algorithms

Quantum Computation (graduate level)

Neural Computation

Computational Linguistics (graduate level)

Natural Language Processing

Operating Systems (graduate level)

Computation Structures

SKILLS

Proficient in:

C

C++

Python

Scala

UNIX Shell

Java

Familiar with:

C#

LabView

Matlab

JavaScript

x86 Assembly

Libraries:

ROS

LCM

OpenCV

TensorFlow

Theano

EXPERIENCE

Prediction Intern

Cruise Automation (General Motors)

Summer 2018

Improved model for robotic cars to predict trajectories of other vehicles and bicyclists.

Testable safety in 3x as many driving situations.

Perception Intern

Optimus Ride

Summer 2017

Created system for robotic cars to predict and avoid other vehicles to handle intersections.

Machine Learning Intern

RightHand Robotics

January 2017

Designed and implemented deep learning architectures for robotic vision and grasping.

Developer

Tanius Technology (prop trading firm)

2015 - 2016

Researched and developed distributed machine learning model and pipeline to predict market patterns.

RESEARCH

MIT CSAIL Learning and Intelligent Systems Group

2017 - 2020

"Hardness of 3D Motion Planning Under Obstacle Uncertainty." 1st Author. WAFR 2018. Invited to special IJRR issue.

"Learning value functions with relational state representations for guiding task-and-motion planning." CoRL 2019.

Developed efficient approximation algorithms for motion planning under uncertainty. Manuscript in preparation.

Designed system leveraging hierarchies to efficiently solve robotic planning tasks / POMDPs. (unpublished)

Stanford Autonomous Systems Laboratory

Summer 2015

Designed vehicle routing algorithm with 10% improvement over state-of-the-art in simulation. Intel STS 2016.

Acknowledged in "Model Predictive Control of Autonomous Mobility-on-Demand Systems." ICRA 2016.

ACTIVITIES

Site Manager

Food for Free COVID-19 Relief Program

2020

Directed team of volunteers for packing groceries and handing off to drivers to deliver to hundreds of households.

Program Director, Head Webmaster

MIT Educational Studies Program

2017 - 2020

Directed educational programs (Splash, Summer HSSP) reaching ~3000 students with ~1000 classes taught by ~500 teachers and run by ~100 volunteers. Mentored future directors. Maintained website used by ~5000 students.

Software Lead

AVBotz

2012 - 2016

Managed the programming team (~12 members) for autonomous submarine capable of manipulating objects, aiming and shooting torpedoes, and navigating around obstacles.

International finalist (7th Place) at RoboSub 2015.

Co-President, HPMS Branch Director

ACE Coding

2013 - 2016

Managed ~16 volunteers to teach weekly programming lessons to ~30 middle school students (~100 students annually).

Organized ACE Code Day, an 8 hour event attracting ~300 students. Taught machine vision workshop.

Middle School Tutor

Cambridge School Volunteers

2019 - 2020

AWARDS

USA Computing Olympiad Platinum Division

Intel Science Talent Search 2016 Semifinalist

Eagle Scout

MIT Battlecode 2018 Finalist (9th place)

PROJECTS

C web browser using Chromium's rendering engine with configurable vi-like key bindings

C C compiler to convert C code to x86 assembly (GAS syntax)

Java artificial neural network based AI for a basic platform fighting game

Python gridded workspace manager for the i3 Window Manager