JACOB DONENFELD

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EDUCATION

Harvey Mudd College *August 2017 - Present*
B.S. in Computer Science and Mathematics

CARRIER OBJECTIVE

To keep learning throughout my life as I spread my love and knowledge for robotics.

TECHNICAL STRENGTHS

Programming Languages C++, Python, Java, Matlab, Racket, R, Lolcode
Other Solidworks, Latex, Adobe Suite, CNC CAD/CAM, Lasercutting, Building

EXPERIENCE

Research in the Lab for Autonomous, Intelligent Robots, HMC 2018-Present

· Researched planning an optimal driving path to maximize information gain for a pollution sensor mapping pollution in a 4D spacio-temporal graph of position vs. pollution over time. Paper to be completed before March for IROS 2019.

Computational Biology Research, HMC 2017-2018

· Worked on an algorithm for the cophylogeny reconstruction problem, adding functionality through software development.

Consumer Behavior Researcher, UCLA Management School 2016-2017

· Studied consumer behavior on how souvenirs and mementos influence spending habits by surveying tourists and non tourists.

Robotics Instructor, Rolling Robots Camp 2015-2016

· Taught children how to code in Python and Scratch, design models, print in a 3D printer, and general teamwork skills.

AWARDS

Winner, HackTech, Caltech's Hackathon 2018

· Won a grant and mentorship from 1517 fund for building a smart trigger lock for a nerf gun at Caltechs 36 hour hackathon.

Finalist, MuddHacks, Harvey Mudd's Hackathon 2017

· Built a drink dispenser and mixer, allowing for combinations of any drinks or a customized drink through inputted amounts of mL/drink. Worked with a group 4, I handled software, systems, and electronics.

4th Place, FIRST Robotics International Competition 2017

· Responsible for autonomous control of the robot, fusing data from computer vision and wheel encoders to locate and control the robot to desired waypoints.

LEADERSHIP

President, Mudd Makerspace 2018-Present

· Manage budget, provide mentorship, host workshops, and fund projects for students.

RELEVANT COURSEWORK PRIOR TO SUMMER 2019

Engineering Mathematics, HMC Spring 2019

· "Applications of differential equations, linear algebra, and probability to engineering problems in multiple disciplines. Mathematical modeling, dimensional analysis, scale, approximation, model validation, Laplace Transforms"

Experimental Engineering, HMC Spring 2019

· "The primary purpose of the course is to teach basic instrumentation and measurement techniques; good lab report practice; technical report writing; analysis and presentation of data; the usage of experimental results for engineering design purposes; and the beginnings of professional practice." Capstone project created an autonomous underwater robot.

Data Structures and Program Development, HMC Spring 2019

· Learned abstract data types such as priority queues, dynamic dictionaries, and disjoint sets, with their efficient data structures and analysis of them. Also covers storage allocation and reclamation.

Aerial Robotics, University of Pennsylvania Freshman Summer

· Online class on quadrotor theory, kinematics, dynamics, linear and nonlinear control, smooth trajectory generation, and multirobot planning, and Euler angles and quaternions.

Engineering Systems, HMC Fall 2018

· "An introduction to the concepts of modern engineering, emphasizing modeling, analysis, synthesis, design, and control."

Principles of Computer Science, HMC Fall 2018

· Covered "information structures, functional programming, object-oriented programming, grammars, logic, logic programming, correctness, algorithms, complexity analysis, finite-state machines, basic processor architecture, and theoretical limitations."

Discrete Mathematics, HMC Fall 2018

· Rigorous proof-based class on combinatorics, number theory, and graph theory.

Advanced Intro to Computer Science, HMC Fall 2017

· Covered state-machines, recursive backtracking, artificial intelligence, circuit design and computer foundations, and assembly.