Charles Van Hook

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EDUCATION

Boston University College of Engineering Boston, MA
Bachelor of Science in Mechanical Engineering May 2026

PROJECTS

Autonomous Robot Design and Creation

- Engineered and constructed a robust robot for autonomous navigation and mapping
- Coded SLAM and image programs to map and navigate environments with waypoints in ROS

Machine Vision Controlled Robotic Hexapod

- Manufactured a 3D printed robotic hexapod for school competition
- Created PCBs to power and control 18 servos in the legs and a 6-dof robotic arm
- Wrote inverse kinematics code with machine vision to autonomously walk the hexapod and pick up objects

Electric Skateboard

- Led a team of 2 to prototype individual suspension skateboard trucks for off roading
- Machined custom metal trucks and suspension
- Designed motor controllers in Altium designer and a lipo battery to reach 25 mph and 10 mile range

AI Chess Board

- Built a chess board with a core-xy gantry and custom circuit board to move chess pieces autonomously
- Authored custom programs to learn chess from players and design profiles to emulate people

INDUSTRY EXPERIENCE

Griffith Observatory Los Angeles, CA
Engineering Consultant, 2020 – 2023

- Devised 3D models of 88 constellations and worked with a foundry to cast the models in bronze
- Programmed MATLAB to test and design different mounting ideas to test structural integrity
- Coded new algorithms for generating surface area and reducing casting cost of obj files

Boeing El Segundo, CA
Technical Intern, 2020 – 2021

- Modeled helical antennas and ran programs to generate radiation patterns for each antenna design to find optimal parameters in a team of three
- Presented findings on the efficiency of helical antennas and large array satellite disks
- Developed equipment to test RF strength from various points around antennas and communicated with senior engineers to test them in labs

SKILLS AND AWARDS

Software: C++, MATLAB, CAD: Fusion 360 and Onshape, Python, Java, html/css/javascript, ROS
Mechanical: Lathe, Mill, Belt Sander, Band and Miter Saws, Drill Press, CNC, 3D Printing
Language: English, Spanish
Awards: First Place Hardware Hackathon - October 2023