

Victor Dong

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Education

Northeastern University

May 2027

Candidate for Bachelor of Engineering in Mechanical Engineering and Physics

GPA: 4.0

Honors: Physics Department Award for Undergraduate Scholastic Excellence (2024), Deans List x3

Courses: Dynamics, Statics, Thermodynamics, Material Science, Mechanics of Materials, Electronics, Modern Physics, Electricity & Magnetism I, Differential Equations and Linear Algebra

Technical Skills

Applications: SolidWorks, HSMWorks CAM, Simulink, Simscape Multibody, Fusion 360, Fusion 360 CAM, Microsoft Excel

Programming: MATLAB, Java, C++, Python, Arduino

Machining: Tormach 3-axis CNC mill, TIG welding, CNC lathe, Penta 5-axis CNC mill, CO₂ laser cutter, FDM 3D printing, fiber optic laser cutter, manual lathe, manual mill

Technical Experience

Northeastern Electric Racing - Lead Suspension Engineer

May 2024 – Present

- Predicting vehicle characteristics and vibrations by creating dynamic simulation with flexible bodies of the car in Simulink
- Utilizing GD&T to denote critical dimensions and tolerances on drawings to send knuckles and hubs out to 3rd party manufacturers for 5-axis milling and CNC lathe processes
- Created components to align with vehicle parameter goals: ride frequency, turning radius, CG, KPI, caster, camber
- Validating 49 unique components through SolidWorks FEA and using iso clipping to inform light weighting process
- Reduced suspension mass by 62% from 110 lb to 41 lb to improve vehicle lap times and handling
- Manufacturing components: knuckles, mounts, rockers, brake rotors on a 3-axis Tormach, waterjet, CNC lathe, Penta 5-axis
- Research and validation of different materials: 7075 Al, 4130 steel, and PH17 hardened steel for strength and thermal resistance

Sant'Anna University - Agricultural Robotics Researcher

September – December 2023

- Designed a robotic probe in Fusion 360 for gathering data on plant root structure underneath soil to inform agricultural physicists to create better mathematical modeling of plants for research into pesticides
- Collaborated and discussed project objectives with physicists in Pisa and Florence to create a two DOF robot with a differential linear and rotational motion system
- Factored in product life, environment considerations, and usability into the design by implementing watertight seals, data retrieval methods, and solar panels for on-site power

Voron - FDM 3D Printer Engineer

May – August 2023

- Designed an FDM 3D printer using Fusion 360 to have a differential core x-y motion system with two NEMA 17 motors and a z-gantry with 4 motors to allow for 2 rotational DOF and 1 translational DOF
- Tuned infill and bed adhesion printing techniques to minimize plastic waste from a sustainability perspective while not compromising part strength and design goals
- Programmed a sensor to probe the bed in a grid to create a 3D mesh to auto level the gantry relative to the bed surface and account for thermal warping for accurate print adhesion on first layer
- Integrated LCD touch screen, MCU, and RPi to have visualization of real time sensor data and print queue system over Wi-Fi
- Processed IMU data from the toolhead to tune motor controller algorithms in Python to eliminate printing artifacts

Vex Robotics - Captain, Head Engineer, Coder, Driver

September 2019 – May 2023

- Planned robots in Fusion 360 to ensure full subsystem integration between drivetrain, element manipulators, and sensors as well as designing Delrin parts to be machined on a CO₂ Boss laser cutter and Tormach 3-axis CNC mill
- Implemented 2D positioning algorithms in C++ with odometry and closed loop control algorithms to fulfill autonomous routines
- Designed 4 robots over 4 years to manipulate game elements through robotic mechanisms such as roller intakes, four bar lifts, chain bars, double reverse four bars, fly wheels, and deployable mechanisms

Work Experience

Cornerstone of Engineering Mentor

September – December 2024

- Mentored 12 students enrolled in first year engineering Cornerstone class to ensure student success
- Guided students through good engineering practices, presentations, and project objectives through weekly meetings

Differential Equations and Linear Algebra TA

September – December 2024

- Ensured consistent and accurate grading of 80 students on weekly exams
- Recommended by professor to grade based on academic excellence in math courses

Essex IQ - Robotics Instructor, Curriculum and Logistics Lead

April 2021 – August 2023

- Managed program logistics with technical school districts in NJ to facilitate robotics classes for 120 middle schoolers
- Curated a 3-week curriculum covering engineering concepts: mechanical advantage, lifts, sensors, coding, etc.