PRANAV CHAUDHARY

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Education

University of Michigan, Ann Arbor   **Ann Arbor, MI**
Bachelor of Science in Engineering - Major: Mechanical Engineering, Minor: Electrical Engineering   **Graduating in 2022**
GPA: 3.65/4.00 *(Dean's List from September 2018 – Present, University Honors Award from September 2018 – December 2018)*
Coursework: Engineering Autonomous Drones, Engineering Coding, Design and Manufacturing of machines, Solid Mechanics, Signals and Processing, Dynamics and Vibrations, Thermodynamics, Economics – Money and Banking, Entrepreneurial Creativity
Pi Tau Sigma Service Chair – Exclusive National Mechanical Engineering Honor Society; Chair of organizing service activities

Project Experience

Michigan Electric Racing (Formula Electric SAE)   **August 2018 - Present**
Vehicle Dynamics and Chassis Engineer (Suspension Lead)
- Analyzed tires data for next 2020 racecar using MATLAB graph plotting, like Traction Circle. Tire choices made from this.
- Designed and manufactured mountings of damper potentiometers for more accurate FEA.
- Lead in the cost analysis of different potentiometers for maximizing sensor choice quality and ordering of potentiometers.
- Designed and manufactured chassis and suspension components for the 2020 race car. Assembled suspension components onto car.
- Created Excel design tools, such as the steering-torque calculator, which calculates tire to steering wheel torque.
- Lead finite element analysis to suspension components such as the rockers using ANSYS.
- Created MATLAB calculators, like the bump calculator that involved free body dynamics analysis of the car.

Materials and Mechanics Lab   **January 2020 - Present**
Research Assistant

- Conduct and lead experiments to test for stress and strain of different polymers, and rubbers, for example using instron machines.
- Perform data analysis of values collected so as to determine which polymer fits a certain role.
- Use different machines to test how different polymers react to different conditions. This can be used to improve polymer formulae.
- Create and test models so as to determine how a certain polymer will behave to different forces and environments.

Remote Controlled Robot   **August 2019 – December 2019**
Team Lead
- Designed remote controlled machine in SOLIDWORKS, which had a subsystem that used a hammer to push down a drawbridge.
- Innovated design to push down a bridge to cross a gravel field and push a block nearly 2.5 times the size of the robot.
- Manufactured all parts of this robot using mill and lathe, and with a heavy focus in CAD.
- Lead the entire team in this process, which meant overlooking budget costs and use of manufacturing material.

Autonomous Drones Course Navigation   **August 2018 – December 2018**
In a team which had 5 students who self-coded a drone
- Coded a drone to autonomously navigate a vertical/horizontal course using C++. Implemented a PID control and response filters.
- Integrated a quadcopter using BeagleBone, Arduino, and a Mission Planner Software.

PID Feedback Controller   **January 2020 – May 2020**
Lab project (Signal Processing and System Processing Course)
- Developed feedback controller using RC circuits and Op-amps, to return a step response.
- Altered resistor and capacitor values to influence the derivative constant of the circuit, which affected the signal response damping.
- Plotted and processed data signal responses from the oscilloscope using MATLAB.

Heterodyne AM radio   **January 2020 – May 2020**
Lab project (Signal Processing and System Processing Course)
- Assembled and tested a heterodyne AM radio consisting of a front-end (antenna, tunable RLC circuit and mixer), IF filter, an envelope detector, a DC blocking capacitor and a speaker. Tested effects of different IF filter frequencies on the frequency response.
- Measured AM demodulator performance by altering the carrier frequency, to highlight which frequencies were not observable

Work Experience

Nanaksar crafts and repairs   **June 2017 – August 2017**
Summer trainee in a fabrication workshop
- Assembled 4-piston and V8 engine. Learned about different components of an engine and the ways in which they are assembled.
- Manually cleaned and fitted engine components in the right places. These engines were then given out to customers.

Practical skills

- Manual Mill skills
- CNC Mill
- Manual Lathe skills
- ANSYS FEA skills

- MATLAB coding
- HTML and CSS
- C++ coding
- Siemens NX
- Data analysis

- Teamcenter
- SOLIDWORKS
- Excel Macros
- Signal Processing