Jack Bonnell

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EDUCATION

Purdue University | West Lafayette, IN August 2020 - May 2024

BS: Mechanical Engineering

- GPA: 3.72 / 4.00
- Relevant Coursework: Static & Dynamic Systems, Fluid Mechanics, Thermodynamics, Design & Manufacturing, Material Mechanics, Electronics Design, Heat Transfer, Control Systems, Differential Equations, Multivariable Calculus, Linear Algebra, Machine Design and Dynamics, Finite Element Analysis, Mechanical Vibration Control, Data Visualization

TECHNICAL SKILLS

- Programming (MATLAB, Python, CSS, HTML) | CAD & FEA (Inventor, SOLIDWORKS, NX, AutoCAD, Creo, Catia, Abaqus)
- Machine Learning and Neural Networks (Pytorch, Tensorflow, Scikit) | Image and Sequenced data processing, CNNs, LSTMs, Reinforcement learning, Q-learning
- Mill and lathe (Conventional & CNC Machining) | Manufacturing (Additive, Forming, Laser Cutting)

EXPERIENCE

Subaru of Indiana Process and Manufacturing Engineering | Lafayette, IN May 2023 - August 2023

Mechanical Engineering Intern

- Used Autodesk AutoCAD to create a new plant layout that implemented lineside parts to improve part location consistency.
- Conducted design analysis on existing jigs and made changes to improve durability and fit using Catia.
- Designed an electrical device that actuates the rear brake calipers of vehicles when the vehicle was completed without filling the brake lines.

Braun Ability Manufacturing Engineering | Winamac, IN June 2022 - September 2022

Manufacturing Engineering Intern

- Implemented a new process for removing and reinstalling rear axles to optimize efficiency and ergonomics.
- Worked with Autodesk Inventor sheet metal tools to develop and manufacture various welding shields to prevent “in-process” damage for multiple vehicles.
- Used Autodesk Inventor to develop templates for drilling and general alignment. Also created other miscellaneous parts for manufacturing processing.

Purdue University Artificial Intelligence In Healthcare| Lafayette, IN August 2023 - Present

Undergraduate Researcher

- Working with a Purdue Nursing Professor to develop a machine learning model to predict instances of cardiac arrest in the emergency department.
- Working with large medical datasets using Python data analytics tools.

CLUBS

Purdue Aerial Robotics Team | *Airdrop and Mechanisms Team* August 2021 - Present

- Worked and collaborated with a small team to develop an autonomous ground vehicle capable of driving to a target location after being airdropped from an autonomous drone.
- Designed and manufactured a mechanism capable of precisely dropping 5 payloads on targets from above 100 feet in the air.
- Created a Matlab simulation to design an efficient mechanism to steer and absorb the shock of an over 30-pound drone while taking off and landing on an airstrip.

Purdue Brazilian Jiu Jitsu Club August 2021 - Present

- Regularly attend and train the meetings 3 times a week with a student-led group of grapplers.

PROJECTS

Robot Dog Design and Manufacturing

- Designed and assembled a robot dog using Autodesk Inventor and Fusion 360 using custom 3D printed parts as well as parts purchased online.
- Programmed the robot dog using Python on a Raspberry Pi along with an Arduino

Machine Learning Classification Model

- Created a machine learning CNN classification model using the Scikit Learn fashion mnist dataset.
- Used the Pytorch Python library to create a model and training loop for the neural network.

CNC Mill Design

- Used Autodesk Inventor to design a 3-axis CNC mill using custom-designed parts as well as parts from McMaster Carr.
- Iterated through the engineering design process to optimize machine cost, resolution, and usable area.