Magnus Frost Murray
magnus.murray@outlook.com 8027772853

Skills and Experience Summary

Mechanical design experience

- Strong 3D CAD skills in Solidworks, Inventor, and Fusion
- Production drawings
- Bill of Materials and parts selection
- Performing stress analysis using FEA software to improve designs

Project management and team collaboration experience

- working under project managers on complex projects

Education

Bachelor of Science in Mechanical Engineering May 2020
The Pennsylvania State University, Berks Campus
Technical Electives: ME 461 Finite Element Analysis, ME 470 Vibration of Mechanical Systems, ME 400 Propulsion and Power, ME 427 Aerodynamics

Work Experience

Systems Solutions Engineer, Xyntek Inc, Newtown PA (October 2020-present)

- Mechanical Design for turnkey automation solutions

Systems Solutions Engineer, Xyntek Inc, Newtown PA (October 2020-present)

- Mechanical Design for turnkey automation solutions
  - 3D modeling of proposed solutions for client presentations
  - Design and production drawings for brackets, machine guards, machine components, and custom T-slotted frame design
  - Electrical enclosure specification and layout
- Field Service
  - Installation and commissioning of high speed scan tunnels (Cognex) for major retailer distribution centers
  - Integrating custom automation solutions into existing lines at pharma sites
  - Interfacing directly with clients on site on go live steps
- Project Coordinator
  - QA/QC for components shipped out to client sites
  - Supervised Technician team
  - Assembly Documentation
  - Training
- Remote Technical support for existing clients
- Mechanical and electrical part sourcing
- Teach/Mentor CAD (Fusion) basics and advanced workflows to other engineers

Landscaper and General Contractor, BKM Group, Kennett Square PA (October
General Contractor, Todd Latyak Home Services, West Chester PA (
Bicycle Mechanic, Garrison's Cyclery, Centreville DE (

- Routine maintenance of mountain and road bikes

School and Research Experience

Bicycle Continuously Variable Transmission Senior Design Project (fall 2019-May 2020)

- Developed novel CVT concept primarily for use on bicycles
- Validated theoretical model with instrumented prototypes
- Optimized design for cost and ease of manufacturability

Dynamics of Frisbee Flight (spring 2016-May 2020)

- Multi-Campus Research Experience for Undergraduates summer 2017 and summer 2018
- Erickson Discovery Grant summer 2019
- Investigated the phenomena of frisbee flight for potential applications to low energy self-stabilizing flight
- Developed launcher with independent angular and linear velocity control of frisbee
- Designed instrumented frisbee with integrated inertial measurement units and pressure sensors for recording flight data

Recapture Pole Remote Bird Observation device (fall 2016-May 2020)

- Fall 2017 Franco Undergraduate Research Award
- Redesigned device to autonomously capture images of bird leg bands
- Designed FDM printed device to withstand harsh environmental conditions for extended periods of time with no leakage or structural failure
- Investigated effectiveness of different surface treatments for water, UV, and abrasion resistance.
- Utilized different methods for aligning and bonding different large 3D-printed structures.

Angular Impulse Mechanism (fall 2018)

- Constructed a hand operated mechanism to provide an adjustable angular impulse for ongoing research at Villanova University

Dynamics Lab Tools (fall 2017-spring 2018)

- Developed 3D-printed tools to aid teaching dynamics engineering course
- Designed snap-fits to make a tool-less, reusable, and secure sensor mount

Renal Artery Stenosis Hemodynamics (fall 2017-spring 2018)

- Adapted CT/MRI scans of defective renal arteries into printed models for fluid dynamics experiments

PADEP project 3D-printing (fall 2018)

- Assisted student teams with 3D-printing parts for their projects.
- Provided teams with quotes for the cost of their printed parts based on print material, volume, labor, time, and consumables.
- Set up, calibrated, and troubleshot new FDM printers

ASME Vice President (fall 2016)

First Robotics Competition President (2015-2016)

- Directed 40-person team to design, build & compete a large partially autonomous complex robot
- Scheduled and directed team meetings
- Improved team dynamics through restructuring of team organization
- Oversaw $25000 budget for robotic parts
- Implemented team wide communication software for real time updates and collaboration between different sub-groups
- Led implementation of computer-vision for real time target tracking & autonomous control
- Implemented various control algorithms including PID, motion profiling, and feedforward

Passion Projects and Activities
Rainwater Harvesting Drip Irrigation System
Ruggedized Golf Cart 12V rail and accessories
High power 48V to 12V converter
Diesel tractor/backhoe maintenance and repair
Small engine maintenance and repair
Mountain and road bike maintenance, repair, and fitting
MIG, TIG, stick welding
machining
Hitch mount bike rack
Ski and Snowboard repair stand

Technical Skills

- Solidworks CAD
- Autodesk Inventor
- Autodesk Fusion
- Autodesk AutoCAD/AutoCAD electrical
- GD&T
- Finite Element Analysis
    - Abaqus
    - Solidworks Simulation
    - Some Ansys Mechanical experience
- Additive Manufacturing
    - Fused Deposition Modeling with ABS, PLA, and PETG
- MeshLab
- Blender for repairing or modifying STL files generated from scans or CAD
- Fabrication and Mechanical Assembly
- Matlab/Simulink
- Version Control with Grabcad and GitHub
- Electrical
    - Circuit design and analysis
    - PCB design
    - SPICE circuit simulation familiarity
- Microsoft Office Products
- Java