Dane Sabo

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Education

Ph.D. **NRC Fellow, University of Pittsburgh**, Mechanical Engineering — August 2023 - Present

- GPA: 3.844/4.0 (Unofficial Transcript)
- **Coursework:** Innovating for Public Impact, Advanced Dynamics, High-Assurance Cyber-Physical Systems, Linear and Digital Control Systems
- Nuclear Engineering Graduate Certificate

BS **University of Pittsburgh**, Mechanical Engineering — August 2019 - August 2023

- GPA: 3.433, Dean's Honor List throughout
- **Coursework:** Linear Algebra for Machine Learning (Graduate), Mechatronics

Skills

Programming: C/C++ (embedded), LaTeX, MATLAB, Python (Pandas, NumPy, SciPy, SymPy, etc...)

Engineering: ANSYS Simulation Suite, FDM printing, Fusion 360, soldering, Solidworks

Business: Customer discovery, GnuCash, Office Suite

Other: Adobe Illustrator, Adobe Photoshop, Blender

Professional Experience

Graduate Student Researcher, Instrumentation and Controls Laboratory — Pittsburgh, PA
Advisor: Dr. Daniel G. Cole — August 2023 – Present

- Conducting research on virtualized networks to simulate control systems with genuine network traffic for nuanced analysis of system dynamics.
- Collaborating with Idaho National Laboratory and Sandia National Laboratory to advance control safety and security.
- Exploring wireless control systems for nuclear power

Independent Contractor (Mechanical Engineer), Human Motion Technologies LLC — Remote // Pittsburgh, PA
December 2022 – June 2023

- **Hip Exoskeleton EXO-004 (Dec 2022 – Jan 2023):** Provided expertise in composites and manufacturing for carbon fiber-reinforced polymer (CFRP) parts, adopting resin infusion as a standard practice.
- **Prosthetics Foot Testing TES-001A02 (Mar 2023 – Jun 2023):** Developed a testing fixture for prosthetic feet, evaluating products for fatigue and ultimate strength failure per ISO-10328 standards, designed for up to 5700 N and two million cycles.

Summer Undergraduate Research Intern, University of Pittsburgh — Pittsburgh, PA
June 2022 – August 2022

- Analyzed the effects of corotating and counterrotating pairs of vortex-generating fences, focusing on separation prevention at various yaw angles and speeds.

Mechanical Engineering Co-op, BMW Manufacturing — Spartanburg, SC
August 2021 – December 2021, January 2021 – April 2021

- **Pruefcubing (Aug 2021 – Dec 2021):** Evaluated buildability and geometric validity of supplier parts for BMW XM performance SUV, supporting metrology processes.
- **Quality Steering (Jan 2021 – Apr 2021, Aug 2021 – Dec 2021):** Monitored devel-

opment series buildability on manufacturing lines and audited prototype vehicles (X3, X4, X5, X6, X7, XM). Developed data management tools to enhance workflows and database accessibility.

Teaching Experience

Teaching Assistant, ENGR 1933 "Science, Technology, and Culture of Craft Brewing" — University of Pittsburgh, Spring 2024

- Assisted in preparing and conducting sensory analysis sessions, including setup, carding, and cleanup during class hours.
- Graded assignments, sensory evaluations, and final exam components, including problem sets and written responses.
- Completed Pennsylvania Responsible Alcohol Management Program (PA RAMP) training as part of the teaching responsibilities.

Content Developer and Teaching Assistant, MEMS 0071 “Intro to Fluid Mechanics” — Pittsburgh, PA, August 2022 – December 2022

- Developed curriculum incorporating fundamental CFD concepts, with a focus on postprocessing, simulation, and meshing for hydrostatic and hydrodynamic problems.
- Conducted weekly office hours to assist students in understanding course material.

Publications

Analysis of Vortex Generating Fences on a Formula Student Multi-Element Rear Wing — 2023
Published in *Ingenium – Undergraduate Research at the Swanson School of Engineering*
Pages 106–111

Projects

Panther Racing, Formula Society of Automotive Engineers Team — 2020 – 2022
Technical Director | 2021 – 2022

- Led a team of 30+ engineers and associated majors.
- Managed a six-figure budget for researching and producing an open-wheel-style racecar.
- Rehabilitated team culture and mentored younger members to develop engineering and communication skills.
- Delivered a final car that completed all events at FSAE Michigan without any failures or breakdowns.
- Improved team performance from 37th/40 (45.4 points) in 2021 to 32nd/99 (462.6 points) in 2022, achieving a 10x points increase.

Aerodynamics and Composites Subteam Lead | 2021 – 2022

- Engineered and designed the aerodynamic package for the 2022 car.
- Demonstrated expertise in carbon fiber composites manufacturing, including vacuum-bagging, wet lay-up methods, and mold preparation.
- Conducted workshops to train prospective team members in composites manufacturing techniques.

Marketing Director | 2020 – 2021

- Designed car liveries for the 2020 and 2021 cars.
- Created team t-shirts and promotional materials for team-associated events.
- Managed social media for a team with 2,000+ followers, increasing engagement and exposure to campus events.