

Rylan Hodgson

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Education

Cornell University, Ithaca, NY

May 2024

Georgia Tech Lorraine (Europe), Metz, France

Fall 2022 Semester Abroad

Degree: BSc, Mechanical Engineering

GPA: 3.76 (Dean's List)

Skills

Technical: MATLAB, YOLOv5, Excel VBA, Java, Python, HTML, CSS, ANSYS FEA, SolidWorks, CAD Design, Machine Vision, Machine Learning, AI, Internet of Things, composites manufacturing, 3D printing

Business: Agile development, lean practices, design thinking, minimum viable products

Relevant Coursework: Innovative Product Design, System Dynamics, Startup Lab, Fluid Mechanics, Heat Transfer, Statics & Mechanics, Dynamics of Flight Vehicles, OOP & Data Structures – Java, Mechatronics, Propulsion of Aircrafts & Rockets

Work Experience

HRL Laboratories, LLC, *Systems Engineering / Digital Manufacturing Research Intern*

May – August 2023

- Developed & iterated on a system of 3 cameras & 20+ in-line sensors to enable multivariate visibility into composites manufacturing, to ultimately decrease supply chain lead times from months to days and reduce material costs by ~20%
- Developed and trained a YOLOv5 machine vision model to accurately recognize 9 types of material defects, which, once implemented, will save manufacturers thousands of dollars in scrapped material and production line down-time
- Prepared slide decks and presented technical progress and budget updates to our customers at Boeing, and used feedback to inform our next steps, with an emphasis on agile development

HRL Laboratories, LLC, *Digital Manufacturing for Composites Research Intern*

June – August 2022

- Designed custom fixtures in SolidWorks (CAD) to outfit a composites manufacturing line with a suite of sensors and cameras to enable the live readout, collection, and prediction of key material properties during the manufacturing process
- Coded and maintained a data acquisition system and analysis programs in MATLAB to collect and analyze millions of data points to investigate the effects of changing manufacturing parameters on final material characteristics
- Designed experiments to characterize the behavior of specific machine parameters, to be added to the digital twin model

IDEX Health & Science, LLC, *Manufacturing Intern, Metrology*

June – August 2021

- Measured optical filters with spectrophotometry and interferometry to create plots for product specification & data sheets
- Learned about coating, metrology, dicing, annealing, and final inspection processes for optical filter manufacturing
- Developed Excel VBA algorithms to organize and visualize 3,000 spectral product measurements to compare yields, inform product pricing strategy, and improve manufacturing techniques – helping maximize profits and minimize scrapped parts
- Updated data and GUI of IDEX annealing calculator software to achieve more accurate temperature recommendations

Cornell University Unmanned Air Systems, *Structures & Payloads*

November 2020 – Present

- Designed, tested, and iterated through multiple versions of motor mounts for VTOL aircraft, taking into account size constraints, high motor temperatures, and flight loads. Used ANSYS to inform weight and stress-reducing design changes
- Presented and participated in design reviews to exchange constructive feedback on technical design and manufacturing
- Used CAD and ANSYS FEA to iterate upon and finalize VTOL landing gear, and manufactured it using composite layouts

Leadership

Cornell Nordic Ski Team, *President*

August 2022 – Present

- Lead team practices, captain's meetings, recruitment efforts, and organize team operations during the racing season
- Work within USCSA league to provide free ski equipment, training, and racing opportunities to students of all ability levels
- Helped grow the team by 2x over two years, making the team more inclusive and in contention to win championships
- NY State Individual Champion in 2020 and raced in US Junior National Championships 2018, 2019, 2020

Water Pump Design Project, *Team Lead*

March – May 2022

- Led a group of 6 to design and manufacture a peristaltic pump to move 1L of water in 1 minute
- Designed, analyzed, and iterated upon pump in CAD to improve manufacturability, efficiency, and reduce costs by 4x
- Presented technical and budget updates to project stakeholders, including professors, machine shop staff, and other students