

Joseph Improta

joeyuimprota@gmail.com | josephimprota.com | 630-822-2100

Education

University of Iowa– MS in Mechanical Engineering December 2024
Thesis: *The Development of a High Speed Water Tunnel*

University of Iowa – BS in Mechanical Engineering December 2023

Experience

Graduate Researcher, IIHR-Hydroscience and Engineering – Iowa City, IA May 2023 – Present

- Conducted free surface CFD simulations using Ansys CFX to analyze water-air interactions, improving model development
- Researched undular wave phenomena and wrote Matlab scripts to analyze the free surface
- Designed a high-speed water tunnel using CAD, achieving a cheaper and more efficient design through design optimizations
- Investigated CFD mesh sensitivity for large-scale simulations, reducing computational costs through optimized mesh parameters

Graduate Researcher, Control, Automation and Robotics Laboratory – Iowa City, IA May 2023 – Present

- Developed IIOT projects, integrating sensors and cloud-based systems to enhance real-time data monitoring for industrial applications
- Built a new OS for a robot using ROS, allowing for students to gain access to another robot to test code on
- Analyzed motion of vehicles and robots using the Optitrack System, allowing for motion verification and accuracy measurements

Mechanical/Assembly Engineering Intern, Kwaliti Tool – Batavia, IL May 2022 – August 2022

- Designed and modeled components for form-seal packaging machines using Autodesk Inventor, reducing material waste and design time
- Collaborated with assemblers to redesign and prototype custom machine components, increasing assembly efficiency
- Gained in-depth knowledge of plastic films and vacuum sealing techniques, leading to improvements in product durability and packaging integrity
- Consulted with customers to design custom packaging systems, improving their production speed through tailored design solutions
- Operated manual and CNC mills and lathes to fabricate precise one-off parts, reducing manufacturing time

Projects

Garage Built Turbojet Engine

- Tasked with building a jet engine for a propulsion class
- Designed and manufactured a custom flame tube
- Developed a starter using ignitors and a blend of propane and kerosene.
- Assembled and safely tested throughout the process

Hand Built Bikes

- Created a custom geometry
- Cut, bent, and tig welded the frame tubing
- Use of multiple materials including chromoly and titanium

Skills

CAD: Creo, Solidworks, Inventor, Fusion 360

Analysis: Ansys CFX/Fluent, Abaqus

Programming: Python, Matlab, C/C++, Java Script

Practical: Machining, Engines, Tig Welding, General hand/power tool use

General Experience: home renovations, engine rebuilds, using heavy machinery