

Arvino Mahadi

amahadi@seas.upenn.edu | (617) 935-2397 | Belmont, MA

EDUCATION

University of Pennsylvania, School of Engineering and Applied Science

BSE in Mechanical Engineering and Applied Mechanics | Cumulative GPA: 4.00/4.00

Philadelphia, PA

Expected May 2029

Relevant Coursework: Machine Design and Manufacturing, Linear Algebra with Applications to Engineering & AI, Energy Systems, Resources and Technology, Intro to Scientific Computing, AT Computational Physics

PROFESSIONAL EXPERIENCE

Phoenix Tailings - Cleantech startup refining rare earth metals using zero emissions processes

Burlington, MA

Mechanical Engineering Intern

July – August 2024

- Designed Argon gas delivery system for high-temp electrochemical cells; created CAD + drawings package and sourced COTS components to cut lead time by 50% and cost by 30%; presented designs in review meetings with senior engineers.
- Integrated airflow system into oxide-cooling vacuum kiln experiment to decrease downtime and improve cell-run efficiency.

Kawal Masa Depan (NGO) - Nonprofit supporting children in Indonesia orphaned by the COVID-19 pandemic

Indonesia

Intern, Payment Systems Integration & Website Migration

June 2022 – August 2024

- Developed and prototyped a subscription-based payment system using Typedream API, integrating Xendit, KitaBisa, and PayPal to enable automated recurring donations and streamline donor experience; contributed to raising over \$265,000.
- Migrated website to WordPress and added bilingual support (English and Indonesian) to reduce cost and expand donor reach.

PROJECTS

Stirling Heat Engine

Philadelphia, PA

Mechanical Designer and Machinist

January 2026 – present

- Design custom Stirling engine components and create detailed drawing packages for approval prior to machining.
- Manufacture precision components using CNC mills and lathes, applying GD&T, DFMA, and tolerance stack-up analysis.
- Iterated designs based on machining and assembly feedback to improve fit, tolerances, and overall engine performance.

Penn Aerial Robotics (PennAiR)

Philadelphia, PA

Mechanical Engineer

September 2025 – present

- Serve on the wing and tail sub-team for SAE Aero Design Regular-Class aircraft, supporting the design, manufacturing, and assembly of wing and tail structures using balsa and plywood, while also contributing to payload integration.
- Design, manufacture, and integrate filler ribs to support leading-edge paneling and improve structural fit and quality.
- Contribute to jig design and servo integration for control surfaces, integrate magnetized payload system to improve stability.
- Conduct CFD (ANSYS) to evaluate different propeller-wing orientations, reduce thrust losses, and guide design decisions.

Flywheel Bike

Singapore

YouTube Demo: <https://youtu.be/AdOR0nzSaVw>

January 2023 – July 2023

- Designed and built bicycle equipped with flywheel system that captures braking energy and reuses it for acceleration.
- Modeled frame, transmission, clutch, and flywheel assembly in CAD; iterated designs to improve structural integrity.
- Overcame machining constraints by partnering with local shops for fabrication and repurposing VEX robotics components.

Physics Simulation of Pendulum-Cylinder System

Singapore

Link to website: <https://arvinomahadi.wixsite.com/physics>

May 2023

- Modeled coupled pendulum-cylinder dynamics in VPython using the Euler method to simulate energy and momentum transfer, incorporating angular and linear motion, torque, and frictional effects, using Logger Pro to parametrize simulation.
- Created interactive visualization with real-time plotting and adjustable parameters (pendulum length, animation speed, axes).

LEADERSHIP EXPERIENCE

Robotics (FRC Team 6731)

Belmont, MA

Engineering Lead

September 2023 – June 2025

- Led 20-member engineering team; designed swerve-drive robots with subsystems such as flywheel shooters, elevator arms, a pneumatic crash-bar, pneumatic climbers, game-piece intakes.
- Qualified for New England District Championship for the first time in team's 8-year history and coordinated outreach events.

Science Olympiad Team

Belmont, MA

Build Lead

November 2023 – June 2025

- Led design and prototyping for engineering events (Wind Power, Air Trajectory, Detector Building, Electric Vehicle, Tower); earned multiple 1st and top-6 finishes at regional and state competitions.
- Designed and manufactured multiple iterations of miniature wind turbines, altering angle of attack, aspect ratio, drag/lift based design, and using different materials (PLA, balsa, saran wrap); researched wind power history, design, physics.

Athletics

Singapore | Belmont, MA

Captain & Athlete

August 2021 – June 2025

- Team Captain of varsity level (Track & Field, Tennis); 8 years competitive Soccer (club, varsity); organized/led workouts.

SKILLS

CAD/Design: SolidWorks (CSWA), Fusion 360, Onshape | **Analysis:** ANSYS (CFD), XFLR5 | **Manufacturing:** CNC Milling, Mastercam, Lathe Operation, GD&T, DFMA, Laser Cutting, 3D Printing | **Programming:** Python, Java