Andrew Park

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EDUCATION

University of Illinois at Urbana-Champaign, Grainger College of Engineering **Expected December 2026**
Bachelor of Science in Mechanical Engineering; Minor in Electrical Engineering, Spanish Cumulative GPA: 4.0/4.0
Relevant Coursework: Fluid Mechanics, Thermodynamics, Design for Manufacturability, Solid Mechanics, Dynamics, Electrical Circuits

EXPERIENCE

Course Grader, University of Illinois Urbana-Champaign **– Champaign, IL** **August 2024 – Present**
- Grading homework for an introductory fluid mechanics course, reviewing and maintaining in-depth knowledge of fluid properties, systems, and interactions

Science Undergraduate Laboratory Intern, Argonne National Laboratory **– Lemont, IL** **May 2024 – August 2024**
- Increased precision by 82% and run time by 60% on a post-processing python script detecting undesirable behavior in sustainable fuel combustion testing through analysis of pressure transducer data
- Identified the start of compression on Rapid Compression Machine experiments within 0.1ms by fitting experimental pressure curves to models of isentropic compression based on Linear Variable Differential Transformer (LVDT) data
- Compared results from pressure and LVDT datasets to evaluate how to account for noise and piston seating time while detecting asynchronous behavior, improving accuracy by 90%

Robotics Team Mentor, Glen Crest Middle School **– Glen Ellyn, IL** **October 2022 – May 2023**
- Mentored a team of 12 middle schoolers in concepts including engineering design and coding
- Coordinated with faculty and members of the school board to allocate resources and competition materials

PROJECTS

Liquid Rocket Engine, *Liquid Rocketry at Illinois (LRI)* **September 2024 – Present**
- Directing a team of three engineers in the creation of a heat transfer analysis script for the chamber of a rocket engine, using the Bartz correlation, Newton-Raphson, and 4th order Runge-Kutta methods to calculate heat transfer and gas flow properties
- Collaborating with a team of four to design and manufacture an ablative sleeve using Siemens NX to decrease the thermal effects of LOX, reducing the probability of melting in the combustion chamber
- Analyzing hoop, shear, and Von Mises stresses from pressure on structural features to define design specifications
- Implementing a predictable failure mode via bolt shear at the nozzle retaining ring to avoid catastrophic failure

6-Axis Robot Arm, *American Society of Mechanical Engineers (ASME)* **September 2024 – Present**
- Leading a group of 15 engineers designing a 6-DOF robotic arm loosely inspired by the Modern Robotics UR3 for presentation at the University of Illinois's Engineering Open House (EOH) event
- Designing robot links and joints to internally house motors, wires, encoders, and bearings to allow smooth motion of the arm
- Utilizing forward and inverse kinematic calculations in Python to define current and future states, convert between the world frame and configuration space and create a visual simulation of different robot configurations
- Implementing path-finding algorithms such as RRT and A* to generate safe trajectories between desired configurations

Hand-Controlled Drone, *American Society of Mechanical Engineers (ASME)* **January 2024 – April 2024**
- Designed and manufactured a remote-controlled claw attachment and circuit housing using Fusion 360 and Cura, interfacing directly with the drone body and power supply, and weighing under 50g to reduce impact on battery life
- Created a circuit to wirelessly transmit and receive a PWM signal to a Servo motor for claw actuation up to 20m

Computer-Controlled Stoplight, *Tau Beta Pi Engineering Honors Society* **February 2024 – April 2024**
- Constructed a 3ft x 1ft x 1ft stoplight model using PVC, Arduino, and incandescent bulbs
- Wrote a script using C++ allowing users to control the state of the light as well as an automatic option

Easy-Boiler, *Computer-Aided Design Course* **August 2023 – December 2023**
- Designed an appliance for convenient food boiling with over 12 interacting parts in Fusion 360
- Conducted customer interviews and market research to identify potential market targets and product ideas, utilizing a Pugh Matrix to narrow design concepts and develop Product Design Specifications

SKILLS

Design: SolidWorks, Siemens NX, Fusion 360, Inventor, Arduino, Cura, JavaScript, DFM, DFA
Analysis & Control: Python, C++, ROS, MATLAB, FEA, aPriori, Java, Microsoft Excel