

Ashna Khemani

Email: khemani@seas.upenn.edu | Cell: (510)-480-2973 | [LinkedIn](#) | Website: ashna-khemani.github.io

Education

University of Pennsylvania — BSE in Mechanical Engineering & MSE in Robotics | *Cumulative GPA: 3.94/4.0*

Current courses: Applied ML, Intro. Robotics, Vibrations/Controls, Computational Physics

Past courses: Solid Mechanics, Intro. Mechatronics, Human Systems Engineering, Machining, Dynamics, Thermodynamics, Thermal-Fluid Engineering, PDEs, Linear Algebra, Intermediate Microecon., Mechanical Design, Intro Management

Skills

- Machine learning, data analysis – Python (sklearn, numpy, Pandas, NLTK, TensorFlow, matplotlib), R (ggplot, caTools, SnowballC, cluster) and MatLab. [coursework on [GitHub](#)]
 - CAD, ASME standard drawings, and fabrication (Solidworks, OnShape, machining, laser cutting, 3D printing).
 - Object-oriented programming in Python, Java, C/C++; Git for version control.
 - Circuits (breadboards, soldering) and controls (Arduino Uno, Raspberry Pi, ESP32).
 - Market research, product design, rapid prototyping & testing, and documentation (MS Office, Notion)
-

Professional Experience

SpaceX — Falcon 9 Launch Intern, Cape Canaveral (May 2024 – August 2024)

- Developed Python script to visualize timeline of fluid system automations after a launch. Used in identifying time sinks in safing processes across all 3 launchpads.
- Reduced pad safing time by 25% at SLC-40 through automation enhancements. Achieved company's goal of safing pad and deploying pad technicians within 1 hour after launch.
- Developed tool to identify software vulnerabilities that failed to flag faulty pad electronics (RTD's, pressureducers, valves, throttles, etc.). Found and fixed 300+ vulnerabilities across all 3 sites.
- Co-wrote report certifying SLC-40 for crewed missions. FDIR analysis on hydraulics & ECS on pad and Crew Arm.

University of Pennsylvania GRASP Lab — Research Assistant (March 2023 – September 2024)

- Redesigned lab's hexapedal and wheeled robots for lunar exploration as part of NASA's LuSTR project.
- Designed automatic data collection and analysis system to efficiently characterize 100+ soft robot membrane materials. Laser-cut and 3D-printed mechanism design. Used Python (sklearn, numpy, etc.) for data analysis.

LCKR — Product Engineer, Market Researcher (May 2023 – August 2023)

- Led market research for startup using NLP on 50,000+ group chat posts to determine primary product.
- Designed initial product by setting technical requirements and creating CAD models.
- Accelerated beta launch by advertising and initiating partnerships with 10+ university facilities and student clubs.

Independent Research Project (August 2021 – June 2022)

- Published design of patient-operated physical therapy device in the *Journal of Student Research – High School Edition*. [[Design of a Physical Therapy Device for Lower Leg Recovery](#)]
- Created viable and cost-effective design in CAD using literature on biomechanics and existing technologies.

University of Southern California — SHINE Summer Researcher (June 2021 – August 2021)

- Developed algorithm to calculate optimized, conflict-free trajectories for multi-drone system with 30+ agents.
 - Simulated results in Python. Presented and discussed findings at on-campus poster session with 200+ peers, professors, and graduate students present. [[MAPF and Trajectory Optimization with Drones](#)]
-

Leadership & Extracurriculars

Penn High-Powered Rocketry — Mechanical Lead (November 2022 – Present)

- Leading 10-person Mech subteam in research, designing/manufacturing custom parts, and assembling 12-foot variable-diameter rocket for team's 2nd IREC competition. Managing timeline, research, processes, and reports. Coordinating across all 6 subteams to ensure all systems are integrated effectively.
- Restarted club post-pandemic. Led team to successful launch in its first year back at IREC 2024. [[article](#)]

VEX Robotics Team 2075A — Team Captain (August 2017 – May 2022)

- Led team of 4 to place in top 2% of teams worldwide for 5 years. Worlds Division Semifinalist in 2021. Coordinated design, build, presentation, and strategy in new competition challenge every year.
- Created PID loop to increase autonomous driving accuracy by 75% and shorten drive time by 30% by using sensor data (inertial, ultrasonic, quadrature encoders) in C++. [[video](#)]
- Designed and built mechanical subsystems (powertrains, 3600rpm flywheel, triple-length linkages) within competition-specified restrictions and limited team budget of \$2,000.

Personal Projects: 3-Body Problem in MatLab, CNNs in Python to classify various datasets. [see [website](#)]

Interests: autonomous systems, product design, aerospace, data science, economics, piano, live theater (as actor or audience)