AKHIL GHARPUREY
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Portfolio Link: https://sites.google.com/utexas.edu/akhilgharpurey-portfolio/home

EDUCATION

University of Texas at Austin – Austin, TX **Major GPA: 4.00/4.00**
B.S. in Mechanical Engineering Honors, Minor in Robotics (Starting Spring 2026) **August 2023 – May 2027**

- Major Coursework: Feedback Control Systems (Spring 2026), Advanced Mechatronics (Spring 2026), Machine Element Design, Programming and Numerical Methods, Materials Processing, Heat Transfer, Linear Algebra, Fluid Mechanics, Mechanics of Materials, Thermodynamics

WORK EXPERIENCE

FlareX – Austin, TX **September 2025 – December 2025**
System Integration Engineer

- Designed a mechanical antenna mount for stable wireless ground communication during flight of an unmanned aerial vehicle (UAV).
- Developed a catapult launch mechanism to minimize fluctuation in the lift-off attack angle of the UAV.

Human-Centered Robotics Laboratory – Austin, TX **August 2024 – Present**
Undergraduate Research Assistant (PI: Luis Sentis, PhD)

- Leading the design and development of a human-centered project funded by an industry grant.
- Developing a bang-bang controller interpreting real-time human electrodermal activity (EDA) data and transmitting PWM signal information through BLE.
- Integrating image decomposition methods and Kalman filtering in OpenCV to detect and track the user's position in real time according to an infrared (IR) camera and emitter.

Texas Guadaloop [UT Hyperloop Organization] – Austin, TX **September 2023 – December 2024**
Vehicle Dynamics Lead **June 2024 – December 2024**

- Led a team of four in designing and manufacturing a bogie suspension chassis for a maglev pod, ensuring a stable configuration during nominal operation.
- Employed ANSYS Static and Transient Structural Finite Element simulations to guarantee the bogie's structural integrity under static and dynamic loads with a minimum safety factor of 2.0.
- Created Failure Mode and Effects Analysis (FMEA) sheets to examine the severity and fixability of all failure scenarios for bogie and braking systems.
- Collaborated with 7 engineering teams to coordinate dynamic system integration with maglev interfaces.

Braking Systems Designer **January 2024 – June 2024**

- Designed and developed a failsafe pneumatic braking system for a Hyperloop pod achieving 0.3 meters of braking distance at a top speed of 5 m/s.
- Utilized ANSYS Transient Thermal and Static Structural to simulate braking load conditions on wheel hubs, verifying structural integrity and performance during operation.
- Developed a Piping and Instrumentation Diagram (P&ID) to model valving and ensure complete coverage of all failure scenarios.

PROJECT EXPERIENCE

Tracker Drone Project – Austin, TX **May 2025 – Present**

- Investigated the design and implementation of an FPV quadcopter drone controlled by following a given object.
- Implemented OpenCV and low-latency (< 5ms) image processing techniques on a Raspberry Pi for real-time object tracking via onboard camera.
- Developed a 14" x 14" lightweight (< 1kg) quadcopter chassis to integrate all electronic quadcopter components.
- Designed a linear quadratic regulator feedback controller in MATLAB for a path-following quadcopter.

TECHNICAL SKILLS

- **Design Software:** Proficient in SolidWorks CAD, ANSYS FEA, and MS Office Suite; familiar with KiCad 9.0 Suite
- **Programming:** Proficient in Python and MATLAB; familiar with Simulink, C/C++, Linux, and Arduino IDE
- **Precision Manufacturing:** Experienced with manual lathe and 3D printer; familiar with manual 3-axis mill