

Rishabh Goel

PhD Candidate in Robotics

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Education

Georgia Institute of Technology PhD in Robotics	2022 - Present
University of Michigan B.S.E. in Electrical Engineering & B.S.E. in Computer Science	2017 - 2021

Experience

Dolby Laboratories ATG <i>PhD Research Intern</i>	San Francisco, CA 2025
Developed an acoustic sensing technique to extract heartbeats using only the speakers and microphones on Meta Ray-Ban smart glasses	
Georgia Institute of Technology <i>Research Assistant</i>	Atlanta, GA 2022 - Present
- Published in Nature Scientific Reports on a battery-free, solar-powered fixed-wing UAV - Developed an ML algorithm to detect failure in soft actuators (in review at Nature Communications) - Designed HealthHub, a wearable health prototyping platform, published at IEEE BSN 2024 - Created PuffEM, an e-cigarette sleeve for estimating nicotine intake, presented at IEEE CHASE 2025 - Designed hardware and electronics for Protean, a heterogeneous battery-free computing platform, published at ACM SenSys 2022	

Skills

Languages: Python, C++, C, MATLAB

ML & Data: PyTorch, Model Training, Data Pipelines, Feature Extraction

Hardware & Electronics: PCB Design, Altium, Eagle, KiCad, SMD Soldering, Reflow Soldering

Embedded Systems: Microcontrollers, FPGA, Sensor Fusion, Battery-Free Systems

Selected Projects

Battery Free UAV — *Autonomous UAV that can fly with just energy harvesting. No Batteries!!*
Tags: robotics, autonomous, battery free, energy harvesting

Drone Air Pollution Monitoring — *Simulating drone fleets to monitor air pollution across campus*
Tags: drones, simulation, path planning

PiezEnhance — *Deep network for reconstructing high-quality audio from piezoelectric microphones*
Tags: deep learning, audio, signal processing

Autonomous Pond Cleaning Robot — *Autonomous robot that scoops trash out of ponds*
Tags: robotics, autonomous, sensor fusion, electronics

Project Holocron — *Project Holocron enables easy updated to my resume and website by keeping a single source of truth document*
Tags: Computer Science, Web Dev, Server, hosting, Python

University of Michigan Solar Car — *Race Electrical Lead for the UM Solar Car Team*
Tags: solar, electronics, PCB, battery management

Whiteboard Plotter — *FPGA-driven system for drawing shapes and text on a whiteboard*

Tags: FPGA, embedded, hardware

Publications

J. Liller, R. Goel, A. Aziz, et al.. “Development of a battery free, solar powered, and energy aware fixed wing unmanned aerial vehicle.” *Nature Scientific Reports*, 2025-01-01. DOI

Rishabh Goel, Tien Pham, Phuc Nguyen, Josiah Hester. “Exploring Batteryless UAVs by Mimicking Bird Flight.” *DroNet '23: Workshop on Micro Aerial Vehicle Networks, Systems, and Applications (ACM)*, 2023-06-01. DOI

Rishabh Goel, Tejonidhi Deshpande, Tingyu Chen, Josiah Hester. “Failure aware and resilient control for soft actuators.” *Living Machines (Late-Breaking Abstract)*, 2024-01-01.

Rishabh Goel, Tejonidhi R Deshpande, Tingy Cheng, Alexander Adams, Josiah Hester. “FAULT: Failure Analysis Using Learning Techniques for soft actuators.” *Nature Communications (In Review)*, 2024-06-01.

R. Goel, J. Hester, A. T. Adams. “HealthHub: A Wearable Health Prototyping Toolkit.” *IEEE 20th International Conference on Body Sensor Networks (BSN)*, 2024-01-01. DOI

Rishabh Goel, Yiyang Wang. “Phantom Puffs: A Phantom Lung to Emulate Smoking Behavior.” *Online Journal of Robotics & Automation Technology*, 2024-01-01.

Abu Bakar, Rishabh Goel, Jasper de Winkel, Jason Huang, Saad Ahmed, Bashima Islam, Przemyslaw Pawelczak, Kasim Sinan Yildirim, Josiah Hester. “Protean: An Energy-Efficient and Heterogeneous Platform for Adaptive and Hardware-Accelerated Battery-Free Computing.” *ACM SenSys '22: Conference on Embedded Networked Sensor Systems*, 2022-11-01. DOI

Yiyang (Diana) Wang, Rishabh Goel, Sheraz Hassan, Yaman Sagar, Alex Cabrel, Josiah Hester, Alexander Adams. “PuffEM: An E-cigarette Sleeve for Estimating User Nicotine Intake.” *IEEE CHASE*, 2025-01-01.

Patents

Batteryless Fixed-Wing Unmanned Aerial Vehicles

2025 — *submitted*

Battery-free unmanned aerial vehicle

2023 (US20230391479A1) — *Active*

Awards & Achievements

- 2nd Place for Create X Idea to Prototype showcase
- Finalist for Sustain X Pitch competition for sustainability-focused startups
- Selected for Create X Summer Program
- 3rd best Solar car in the world - World Solar Challenge, Australia 2019
- Best Solar Car in America and 2nd best in the world - American Solar Car Race 2018