Grant Proposals

Funded Proposals

US Navy
ACTIVE
SBIR N231-071-1180
Compact Touch-Capable Drone for Non-Destructive and Visual Inspection in Elevated and Small Spaces, PI, (co-PI: Zachary Adams of Pitch Aero), September 01, 2023 – August 31, 2024, $180,000.

Dept. of Energy
Off. of Electricity
ACTIVE
SBIR C56-08b
Drone-Deployable Transmission Sensor Unit for Widespread Phasor, Power Quality, and Environmental Measurement to Increase Grid Throughput, Reliability, and Efficiency, PI, (co-PI: Zachary Adams of Pitch Aero), September 01, 2023 – August 31, 2024, $200,000.

National Science Foundation
ACTIVE
NSF | Foundational Research in Robotics
EAGER: Robust Data-Driven Robotic Manipulation via Bayesian Inference and Passivity-Based Control,
Boise State PI, (University of Kentucky PI: Hasan Poonawala)
August 01, 2023 – July 31, 2023, $262,193.

US Dept. of Agriculture
ACTIVE
SBIR: Installation of Multiple Bird-Diverters on Power Lines via Drone, PI, (co-PI: Zachary Adams of Pitch Aero), July 01, 2023 – March 01, 2024, $180,000.

INBRE Biomed
ACTIVE
Detection of Cellular Fibrous Networks via Machine Learning
PI, May 2022 – May 2024, $130,150

National Science Foundation
ACTIVE
NSF | CASIS
ISS: 3D Bone Marrow Analog to Determine the Contribution of Mechanical Signals to Aging MSC Function in Microgravity,
co-PI, (PI: Gunes Uzer of Boise State University)
November 01, 2020 – October 31, 2023, $315,000.

Bastian Solutions
CLOSED
Human Presence Detector
PI, February 01, 2021 – May 31, 2021, $10,000.

Bastian Solutions
CLOSED
Automatic Calibration of Robotic Manipulators
PI, January 01, 2020 – May 31, 2020, $10,000.

Pending Proposals

National Inst. of Health
COBRE Extension P20GM109095
Role of Cellular Mechanotransduction of Low Intensity Vibrations in Regulating Exracellular Matrix Synthesis
co-PI, (PI: Gunes Uzer of Boise State), October 01, 2023 – September 31, 2024, $400,000.

US Army
SBIR A232-014-0383
Power Line Perching Drone
PI, (co-PI: Zachary Adams of Pitch Aero),
September 15, 2023 – September 14, 2024, $167,345.

Pending Proposals – Continued

National Science Foundation
Major Research Equipment,
Track 1 Acquisition of a Digital Real-Time Simulator to Enhance Research and Student Research Training in Next-Generation Engineering and Computer Science co-PI, (PI: Eklas Hossain of Boise State),
August 21, 2023 – August 20, 2026, $294,451.

Proposals in Preparation

National Science Foundation
Major Research Equipment
Driving Simulator for Research and Education
co-PI, (PI: Mandar Khanal of Boise State),
May 01, 2024 – April 30, 2027, $550,000.

National Science Foundation
Small Business Technology Transfer STTR
Stable Manipulation with a Cyclorotor-Based Drone Near Power Lines
PI, May 01, 2024 – April 30, 2025, $250,000.

Declined Proposals

Department of Energy
SBIR I: Drone Collection and Evaluation of Contaminated Nuclear, and Chemical Samples for Low-Risk Facility Contaminant Characterization
PI, (co-PI: Zachary Adams of Pitch Aero), Jun 01, 2023 – May 31, 2024, $200,000.

Department of Energy
SBIR I: Drone-Deployed Active Thermography Sensor for Wind, Turbine Blade Subsurface Defect Detection
PI, (co-PI: Zachary Adams of Pitch Aero), Jun 01, 2023 – May 31, 2024, $200,000.

National Science Foundation
NSF: Biomechanics and Mechanobiology
Cellular Mechanotransduction of Low-Intensity Vibrations
co-PI, (PI: Gunes Uzer of Boise State University)
Jun 01, 2023 – May 31, 2026, $499,999.

National Science Foundation
SBIR I: Drone Infrastructure Installations,
PI, (co-PI: Zachary Adams of Pitch Aero), Mar 01, 2023 – Feb 29, 2024, $274,925.

National Science Foundation
CAREER
Foundations of Robotics
CAREER: Data-Driven Design of Passivity-Based Contact-Aware Gaussian Process Controllers, PI, September 01, 2023 – August 31, 2028, $552,088.

Declined Proposals – Continued

National Science Foundation
Foundations of Robotics
Collaborative: Provably Stable Control Design via Bayesian Inference for Robust Manipulation using Passivity and Automated Verification, PI, (co-PI: Hasan Poonalawa of U. of Kentucy), January 01, 2023 – December 31, 2025, $288,882.

National Inst. of Health
R21: Exploratory/Developmental Research Grant Program
Cellular Mechanotransduction of Low-Intensity Vibrations, co-PI, (PI: Dr. Gunes Uzer of Boise State)
October 10, 2022 – September 30, 2023, $385,930

National Science Foundation
Foundations of Robotics
Humanoid walking in real-world environments: learning model uncertainty for robust model-based control, PI, (co-PI: Pranav Bhounsule)
June 01, 2022 – May 31, 2025, $255,590

National Science Foundation CAREER
Foundational Research in Robotics
Data-Driven Energy-Shaping Control Design for Robotic Systems, PI, September 01, 2022 – May 31, 2027, $509,061

Amazon Research Awards CAREER
Artifical Intelligence for Robotics
Data-Driven Energy-Shaping Control Design for Robotic Systems, PI, April 01, 2022 – March 31, 2023, $80,000

NIH Center of Biomed. Exc.
Detection of Extracellular and Cellular Fibrous Networks via Machine Learning, PI, (*resubmitted*) March 2021 – March 2023, $100,000

National Inst. of Health
R01AG059923-02 NOT-OD-221-094: ML Supplement
Role of LINK-mediated Mechanosignaling in MSC Aging, co-PI, (PI: Dr. Gunes Uzer of Boise State)
October 10, 2021 – September 30, 2022, $280,901

National Science Foundation
Foundational Research in Robotics
One stride at a time: fast online optimal control of humanoids on complex terrain, PI, (co-PI: Pranav A. Bhounsule of U. of Chicago)
June 01, 2021 – May 31, 2024, $254,565

National Science Foundation CAREER
Dynamics, Control and Systems Diagnostics
Robust Control Design through Contact via Neural Ordinary and Stochastic Differential Equations, PI, September 01, 2021 – August 31, 2026, $505,243

National Science Foundation
IIS: Information and Intelligence Systems
Optimal Manipulator and Controller Design for Decentralized Robotic Actuation, PI, September 01, 2019 – August 31, 2022, $263,992

US Army
AP17-005: Great Vehicle Systems (GVS)
Robotic Tool Kit (RTK) Logistics and Automation, co-PI, (PI: Steve Swanson of Boise State), October 01, 2019 – December 01, 2020, $100,000

Declined Proposals – Continued

National Science Foundation
EFMA: Emerging Frontiers in Research and Innovation
Octoboteel: Swim Like an Eel, Manipulate Like an Octopus
PI, September 01, 2018 – August 31, 2022, $1,999,999

National Science Foundation
CMMI – S&CC: Smart and Connected Communities
Efficacy, Adoption, and Resilience of Decentralized and Community Based Demand Response Programs, co-PI, (PI: John Gardner of BSU)
October 01, 2018 – September 30, 2022, $1,949,245

National Aeronautics Space Admin.
80HQTR20NOA01-20ECF B1:Early Career Faculty (ECF)
Multi-Robot Coordination for Dynamic Manipulation and Extreme Terrain Traversal, PI, October 10, 2020 – September 31, 2023, $544,052

National Inst. of Health
R15: NIH Research Enhancement Award
Robotics inspired Knee BRACE: Biomechanical model that restrains and alleviates cartilage damage, co-PI, (PI: Dario Villarreal of SMU)
October 10, 2020 – September 30, 2023, $429,682

US Department of Agriculture
USDA-NIFE-AFRI-006739: Agriculture and Food Research Initiative
Sustainable Food Safety Systems for Biofilm Mitigation in Food Processing, co-PI, (PI: Jim Browning of Boise State), August 01, 2020 – July 31, 2025, $9,997,940

Office of Naval Research
Control of Autonomous Landing of Unmanned Aerial Vehicles, co-PI, (PI: Inanc Senocak of U. of Pittsburgh)
March 01, 2018 – March 01, 2021, $700,000

Office of Naval Research
High-Fidelity Flow Analysis and Control of Undulatory Fish Locomotion, PI, January 01, 2018 – January 01, 2021, $650,000

Current Research Students

Name	Degree	Discipline	Role	Expected Graduation
Chris Dagher	PHD	Computing	Advisor	Spring 2027
Farnaz Darghiasi	PHD	Biomedical	Co-Advisor	Spring 2027
Chandika Silva	MS	Mechanical Eng.	Advisor	Spring 2025
Omor Khan	MS	Mechanical Eng.	Advisor	Fall 2023
Alex Peterson	MS	Mechanical Eng.	Advisor	Fall 2024
Yafa Benavidez	UG/FT MS	Mechanical Eng.	Advisor	Spring 2025
Nina Nikitina	N/A	Computer Science	Mentor	Graduated
Oliver Macdonald	UG	Mechanical Eng.	Advisor	Spring 2024