

Mechanical and Materials Engineering Department

POSTER SESSION, 8:30am to 12:00pm Alden Hall

Design and Kinematic Evaluation of a 5-DoF Surgical Instrument

Josh Kleiman, Cameron Crane, Calvin Page,
Nicholas Johannessen

Advisor: Adam Powell, Yihao Zheng, Sharon
Johnson

NASA Lunabotics

Zeb Carty, Kelli Huang, Ian MacInerney, James
Nguyen, Terence Tan, Sean Thal, Giovanni
Giacalone, Brendan Byrne

Advisors: Ken Stafford, Carlo Pincioli

Wearable Biometric Monitoring for Collegiate Soccer Athletes

Evan Brady, James Carmody, Krish Patel, Jennifer
Russo

Advisors: Mehul Bhatia, Bashima Islam, Taimoor
Afzal, Walter Towner

Design and Fabrication of an Operational RCV Internal Combustion Engine

Michael Zembruski, Molly Vincent, James Ralph,
Devin Patel, Jack Parker, Jiwon Shon

Advisor: Selcuk Guceri

Augmented Reality for Ultrasound Imaging

Jack Charpentier, Brian DeFlaminio, Kavya Mani,
Jordan Pina

Advisors: Yihao Zheng, Ziming Zhang

Wings of Gompei

Michael Magalhaes, Aaron Vaz, Marc Rich, Daniel
Barmakian, Matthew Gadziala, Adelan Latli,
Lauren Faulkner

Advisor: Alireza Ebadi

WPI Assists MS: A New TECHnique

Jonathan Adams, Evan Wertz, Joseph Puia,
Douglas Cain

Advisor: Alireza Ebadi

Autonomous Intervention Medical Tools

Bailey Koestner

Advisor: Lee Moradi

Design and Evaluation of a Propulsion Aid Device for Folding Wheelchairs

Amanda Borden, Megan Jacene, Stephanie Steriti

Advisors: Sarah Jane Wodin-Schwartz, Elisabeth
Stoddard

Engineering Enclosures for Space: Architecture for The Next Frontier

Samuel Dickens, Joseph McNeill, Natanel

Pinkhasov, Aunika Yasui

Advisors: Soroush Farzin, Nima Rahbar, Carrick
Eggleston

Introduction to Acoustics Course Development

Samuel Lambert, Lauren Meinhold, Jacob Bendick,
James Obermaier

Advisors: Joseph Stabile

Automated Design Tool for Arduino Circuits

Gabriel Buziba, Yangyang Jin, Andres Negron,
Casey Wohlers

Advisor: David C. Brown, Pradeep Radhakrishnan

The Design and Prototyping of a Low-Cost & Efficient Ocean Cleanup Robot

Gabriel Espinosa, Danny Ngo, Sebastian Valle,
Alexander Wadsworth

Advisors: Selcuk Guceri, Vincent Aloï

Design of an Airborne Particle Concentrator

Lucien Wallace

Advisors: Sarah Jane Wodin-Schwartz, Elisabeth
Stoddard, Holly Ault

PMKS+: An Application for Generating and Analyzing Planar Linkages

Nicole Burgess, Robert Eskridge, Tyler Evans

Advisors: David C. Brown, Pradeep Radhakrishnan

Wankel MQP

Michael Bragg, Giovanni Vecchiarino, Andrew

Wirtz, Jack O'Neill, Nikki Lam, Peter Fernholz

Advisor: Selcuk Guceri

Reverse Engineering the Parker Fly Vibrato Spring

Imogen Barnes, Chloe Connolly, Darcy Milligan, Thomas Piccione

Advisors: Fiona Levey, V.J. Manzo

Low Profile Home Speaker Design

Jake Arabian, Heath Bastow, Rion Crear, Keira Lynch

Advisor: Joseph Stabile

Undersea Deployment of an Encapsulated Aerial Vehicle

Dylan Campbell, Tucker Doolan, William Kennedy, Owen Krause, Jared Krueger, Andrew Peyton, Morgan Raposa

Advisors: Mehul Bhatia, Markus Nemitz

Soccer ball design to mitigate the “Knuckleball effect”

Elias Gonzalez, Tucker Carmichael, Noah Herzig, Nora Smith

Advisors: Fiona Levey, Aswin Gnanaskandan

Kinetic Sculpture

Liam Bry, Lucy Buda, Magnus Crooke, Patrick Healy, Gabriel Pardo Cota, William Mara

Advisor: Eben Cobb

Coastal Clean Up

Nathan Lipka, Raul Villalobos, Madeline Connor, Mohamed Aljundi, Kellen Queeny

Advisors: Selcuk Guceri, Vincent Aloï

Design and Testing of a Rotational Speed Sensor with Zero Latency for Unmanned Ground Vehicle

Yicheng Si

Advisors: Vladimir Vantsevich, Lee Moradi

Building a Realistic Shoulder Model

Sean Merone, Gray Rahm, Cameron Leffler

Advisor: Fiona Levey

Advancing Humanoid Robots: Demonstration of Standing and Assisted Walking Alongside a New Simulation Framework

Jack Rothenberg, Dylan Nguyen, Jatin Kohli, Ana Roure, Scott Pena, Stephen Fanning

Advisors: Pradeep Radhakrishnan, Dirk Albrecht

Optimizing Partial Emission Pump Performance

Jacob Abrogar, Patrick Daly, Gabriela DiMauro, Shivaani Gopal, Keith Mesecher

Advisor: Ahmet Sabuncu

Heatsink Design for Electronic Equipment

Isabel Hallal, Tia Lee, Bryce Kennedy, Alexa Klamka

Advisors: Lee Moradi, Ahmet Sabuncu

Design of an Internal Fixation Device for Lateral Humeral Condyle Fractures in French Bulldogs

Adam Giordani, Harold Wotton, Ryan Gottwald

Advisor: Kristen Billiar

Sensor and Servo Enhanced Smart Arm Cast

Aedan Fahy, Achilles Gikas, Shawn Mills, Shaniqua Miller

Advisors: Mehul Bhatia, Songbai Ji

3D Silicone Printer

Maxwell Onffroy, Luke Regan, Jacob Talbot, Owen Weber

Advisor: Joseph Stabile

A Transfection Device to Modify Mammalian Cells

Jack Melvin, Luke Rudolph, Donovan Sevilla, Cassidy Williams

Advisors: Sakthikumar Ambady, Ahmet Sabuncu

Adaptive Cycling: Enhancing Safety, Comfort, and Learning on an Adaptive Bicycle for a Child with Achondroplasia

Natalie Gonthier, Alden Johnson, Julia Kay, Christopher Nerkowski

Advisor: Sarah Jane Wodin-Schwartz

Maximizing Energy Output of Wind Turbines through Novel Turbine Designs

Jacob Isaac, Georgios Komninos, Jose Arturo Leal Figueredo, Matthew Segui

Advisors: Aswin Gnanaskandan, Ahmet Sabuncu

Design of an Arm Simulator for Testing Wearable Blood Pressure Monitoring Device

Anna Zauha, Michael Haroutunian, Matheos Simantirakis, Tevin Makoye

Advisor: Yihao Zheng

Designing and Testing a Safe and Adjustable Bicycle for a Child with Achondroplasia

Avinash Bissoondial, Eliza Dion, Katharine Miller, Kelsey Reno, Sequoia Truong
Advisors: Sarah Jane Wodin-Schwartz, Zoe Reidinger

Expanding the Functional Capabilities of the Tongue Prosthesis

Li DeWitt, Avery Macomber, Mylla Santana, Deborah Diniz
Advisors: Pradeep Radhakrishnan, Dirk Albrecht

Open Source Desktop CNC Mill

Alex Brown, Gabriel Brown, Brian English, Abigail Hodges, Luke Hoy, Jacob Schools
Advisor: Pradeep Radhakrishnan

Reversible Solid Oxide Cell Performance Optimization

Aritro Deb Sarker, Elliot Dunham, Shannen Preble
Advisor: Yu Zhong

Breakfast Sandwich Robot

Trevor Faber, Ethan Moynihan, Mathew Balquin, Samson Hodges
Advisors: Pradeep Radhakrishnan, Fiona Levey, Bo Tang

Lightweight and Efficient Manifold Design for Hydrogen Fuel Cell Powered Unmanned Aerial Vehicles (UAVs)

Sophia Islam, Avery Purtell, Liam Hemmerling, Michael Bonito, Jack Cassidy
Advisor: Ahmet Sabuncu

Design and Construction of a Tilting Platform in a Wind Tunnel for Wildfire Testing

Dillon McDermott, Samuel Griffiths, Sophia Lindsay, Eric Montiverdi
Advisor: Albert Simeoni

Energy Harvesting for the Army

Joel Eckstrom, Flint Eller, Keston Holohan, Yashas Honnavalli, Ethan Shaw
Advisors: Pratap Rao, Gregory Noetscher

Wearable Near-Infrared Spectroscopy Device for Acute Orthopedic Trauma

Krishram Kothimbakam, Timothy Lee, Alex Moreira, Gautham Rajeshkumar
Advisor: Yihao Zheng

Development of a Modular Upper-Body Strength Enhancement Powered Exoskeleton Device

Ilyssa Delizo, Nathaniel Dixon, Matthew Frey, Mionna Green, Christopher Johnson
Advisors: Mehul Bhatia, Andre Rosendo, Stephen Bitar

A Robotic Platform For Neurointervention

Alexander Masiero, Maria Aranda Ramirez, Luka Christianson, Edward Flanagan, Tyler Brown
Advisors: Yihao Zheng, Ziming Zhang

Wāwāmalu Water Tank and Irrigation System Design

Zackary DiCelico, Jack Yebba
Advisors: Selcuk Guceri, Lauren Mathews

Palm Print

Cameron Shelley, Matthew Folenta, Justin DeBeaucourt, Tereza Hrubá, Isaac Lau, John Mansour
Advisor: Joseph Stabile

Parametric UUV Design Tool

Joshua Barney, Belkys Felix Nova, Emma Gilroy, Keelan Smith
Advisor: Ahmet Sabuncu

Detecting and Correcting Bends in Medical-Grade Endoscopes using Computer Vision and Cold-Rolling Processes

Abigail Clemence, Nikita Igoshin, Chenhao Li, Praniva Pradhan, Jessica Rhodes, George Shelton
Advisor: Pradeep Radhakrishnan

Modular Gaming Table

Kaiwen Chen, Jimmy Clemente, Joshua DeVoy, Nikolaos Konstantinou, Emma Nollman, Chloe Trotta-Smith
Advisors: Medhi Mortazavi, Donald Brown

Automated Flying Disc Inventory

Matthew Adam, Tristan Andrew, Benjamin Antupit, David Costa, Claire Higginson, Daniel Ouellette, Jonathan Whooley
Advisors: Greg Lewin, Walter Towner

Formula Electric Racecar

Arnav Sacheti, Carson Graham, Connor Dowgielewicz, Emma Dimmig, Evelyn Maude, Harris Brancazio, Henrique Checcucci, Hussain Bhatti, John Demedeiros, Samuel Kierstead, William Gunn, Zoe Goodman
Advisor: William Michalson

Hydroelectric Power for Off-the grid Farms

Juancarlo Mantica
Advisor: Ahmet Sabuncu

PLA Recycler

Samuel Appiah Kubi, Evan Arenburg, Nathan Dorman
Advisors: Mehul Bhatia, Andre Rosendo

SailBot 2023-24

Erin Murphey, Theodore Winters, Anthony Virone, Matthew Gomes
Advisors: William Michalson, Kenneth Stafford

Design & Assembly of a 3D Printed Humanoid for At-Home Assistive Care

Merel Sutherland, Anna McCusker, William Michels, Shivank Gupta
Advisors: Pradeep Radhakrishnan, Derren Rosbach, Dirk Albrecht

Design of a High-Impulse Mechanical Apparatus for Dynamic Testing of Novel Energy-Absorbing Composites

Andrew Amkreutz, Alessia Kodhimaj, Cory Abraham, Konstantin Nikolaychuk
Advisors: Diana Lados, Anthony Spangenberg

Magnesium Production and Recycling for Clean Energy

Artem Iurkovskyi, Cooper Langner
Advisor: Adam Powell

Design and Fabrication of a Gas Turbine Engine

Terrence Benedict, Hunter Carey, Jacob Sledge, Isaac Kreiger
Advisor: Selcuk Guceri

Reinventing Shoe Soles Using Axiomatic Design to Reduce Lower Leg Injuries

Sean B. Foody
Advisor: Christopher A. Brown

Design and Optimization of Novel Impact-Resistant Composites for Energy-Efficient Transportation Applications

Matthew Boisvert, Kiana-Karla Layam, Mark Ruddat, Joseph Saladino
Advisors: Diana Lados, Anthony Spangenberg

Multi-orientation Autonomous 3D Welding with an Industrial Robot Manipulator

Cameron Earle, Jack Tervay
Advisors: Andre Rosendo, Jianyu Liang

Kinematics Design and Analysis for Recovery Evaluation of Spinal Cord Injury (KARESCI 2)

Apollinaris Rowe, Landen Kovens
Advisors: Michael Engling, Yuxiang Liu

Design, Realization, and Application of a Positioner for High Resolution Optical Metrology in Aerostructures

Paige Campagna, Ryan Powers
Advisor: Cosme Furlong-Vazquez