

# Darren Biskup

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## EDUCATION

### University of Illinois, Urbana-Champaign

GPA: 3.94/4.00

*B.S. Mechanical Engineering, Computer Science Minor**May 2024*

- *High Honors, James Scholar Honors Program, Dean's List, ASME*
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## RELEVANT COURSEWORK

- Computer Control of Mechanical Systems, Engineering Materials, Heat Transfer, Signal Processing, Statics, Dynamics, Solid Mechanics, Fluid Dynamics, Dynamics of Mechanical Systems, Thermodynamics, Algorithms and Data Structures
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## SKILLS

**Computer Aided Design:** CATIA 3DEXPERIENCE, Autodesk Fusion360, SolidWorks**Computer Programming:** C++, Python (OpenCV, scikit-image), and Java. HTML and CSS**Technical:** Design for Injection Molding, Battery Pack Design, DFM, GD&T, Mechanical Design

## EXPERIENCE

### Mehta Research Group/GazzolaLab, UIUC

JAN 2023 - PRESENT

*Undergraduate Research Assistant - Soft Robotics*

- Connected fiber-reinforced soft actuators in parallel and implemented joystick control for the robotic soft arm using a Raspberry Pi to control pneumatic solenoid valves. Implemented a recursive low-pass-filter to enhance joystick input in real-time.
- Proficiently utilized Python's OpenCV and scikit-image libraries to perform camera distortion calibration on action cameras, ensuring accurate and high-quality image processing for the robotic soft octopus arm project.
- Spearheaded the design and construction of a precise 3D grid calibration system using a laser-cut clear acrylic board with green paint, resulting in the accurate capture of pixel coordinates of green dots using blob detection.
- Demonstrated exceptional problem-solving skills during the DLT calibration process, ensuring seamless data acquisition for the research project, and enabling the team to capture and analyze precise 3D coordinates efficiently.

### Skydio

MAY 2022 - AUGUST 2022

*Product Design Engineering Intern*

- Design for Injection Molding: Utilized CATIA 3DEXPERIENCE to redesign the Navigation Camera mounting mechanism for the company's next generation performance quadcopter drone.
- Communicated with overseas vendors in China to implement design change, ensuring injection moldability and minimal lead time. Kicked off injection mold retooling for newly redesigned Navigation Cameras.
- Designed and prototyped the mobile tablet adapter for the next generation drone controller using FDM and SLS 3D-Printing. Received DFM feedback from injection molding vendor.
- Worked with Manufacturing Engineers to design wire routing layout for drone RF cables, board to board connections, 3-phase motor power cables, LED cables.
- Designed custom wire clips and wire guides for injection molding, prioritizing ease of assembly while also taking into consideration potential interference from RF-sensitive electronics.

### Lucid Motors

MAY 2021 - AUGUST 2021

*Mechanical Engineering Intern, High Voltage*

- Battery Pack Development: Improved design for the high voltage chain halving the number of bolts required to join busbars. Conducted thermal analysis on busbar joints with new design to evaluate the new design's effect on car's horsepower, range, efficiency, and thermal endurance.
  - Devised a method of measuring resistance of busbar joints up to 50% more accurate than the HIOKI low ohmmeter.
  - Collected and analyzed data on heat generation from bolted busbars joints, and used this data to calculate theoretical horsepower and efficiency loss of specific joints.
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## PROJECTS

*Senior Capstone Project - Neurosurgical Balloon Tunnelling Device*

- Developed an innovative shunt passage method for ventriculoperitoneal operations which minimizes tissue damage and eliminates the need for backtracking leading to a reduction in operation time.
- Built a pump controller to test both pneumatic and hydraulic solutions, integrating an Arduino microcontroller, I2C pressure sensors, and motor control circuitry (H-bridge, flyback diodes, solenoid exhaust valves)