ANNIKA SRINIVASAN

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EDUCATION

University of Illinois Urbana-Champaign *(UIUC)*   **Expected December 2025**
Bachelor of Science in Mechanical Engineering | GPA: 3.95/4.00   Champaign, IL, USA

RELEVANT COURSEWORK

Computer-Aided Design | Design for Manufacturability | Dynamics of Mechanical Systems | Electrical & Electronics Lab | Intro Computing: Engrg & Sci | Mechanical Design I

SKILLS

CAD: Creo, SolidWorks, Cura, AutoDesk Fusion 360, AutoDesk Inventor, ANSSY SpaceClaim, AutoCAD
Simulation: MuJoCo, CLINK (Linkage Model Analysis Tool), ANSYS Discovery
Prototyping: Arduino, circuit design, 3D printing, laser engraving, GD&T, soldering, shop tools
Programming Languages: MATLAB, C++, Python

RESEARCH EXPERIENCE

Robotics Institute Summer Scholars Program (RISS)   **June 2024 – Present**
Carnegie Mellon University | HARP Lab ↗ | RCHI Lab ↗   *Pittsburgh, PA, USA*

- Researched and identified gaps in existing segmentation models for wound detection
- Conducted data analysis to establish motion requirements and design recommendations for wound-dressing robot, informing design of wound-dressing end-effector
- Designing and prototyping compliant end-effector for wound-dressing robot

RoboDesign Lab   **October 2022 – Present**
UIUC | RoboDesign Lab ↗   *Champaign, IL, USA*

Computation of Human Centroidal Dynamics

- Employing a Human-Machine Interface for real-time acquisition of data, facilitating the computation of the centroidal dynamics model for a human pilot to define metrics such as the centroidal momentum matrix, centroidal momentum, centroidal inertia, and average spatial velocity
- Leveraging the developed model to investigate human motion and balancing strategies to inspire robotic control and help expand the range of replicable human motions by the robot beyond walking

HOPPY Simulation

- Applied robot dynamics and controls principles, including finite-state machines, Jacobians, and trajectory planning, to begin creating an accurate dynamic model of HOPPY, a robot that jumps around a fixed gantry
- Employed the software program MuJoCo to simulate the model and HOPPY's movement within the gantry environment

The Human Dynamics and Controls Lab   **March – December 2022**
UIUC | The Human Dynamics and Controls Lab ↗   *Champaign, IL, USA*

Position Velocity Resistance Meter (PVRM)

- Performed data collection and analysis using motion capture system markers to validate a custom wearable measurement device that tracks human motion (the PVRM)

Medical Training Arm Simulator

- Designed the shroud for an elbow simulator that mimics neurological behaviors to help medical students improve their clinical techniques during examinations in hopes of standardizing diagnostic procedures
- Optimized the number of connections and fasteners to facilitate manufacturing and assembly

- Applied SolidWorks, Cura, and machine tools to develop multiple 3D printed prototypes and evaluate their efficacy

WORK EXPERIENCE

Caterpillar   **May – August 2023**
Engineering Corporate Intern   *Clayton, NC, USA*
360-Degree Camera System

- Researched and implemented the Caterpillar Work Area Vision System (WAVS), an aftermarket camera system, onto a mini hydraulic excavator to enhance operational efficiency and safety
- Compared a prototype low-cost alternative camera system to WAVS to determine the optimal solution

Boom Swing Sensor Accuracy

- Improved the angle measurement accuracy of the boom swing sensor on a mini-hydraulic excavator by completing GD&T analysis on the linkage design for the sensor, identifying the primary source of angle error through simulations in CLINK
- Modified the design feature contributing to angle error in Creo, producing a manufacturable solution

PROJECTS

Automated Slicer | *Mechanical Design I*   **August – December 2023**
  ∗ Designed and fabricated an automated slicing mechanism for diverse food items using AutoDesk Fusion 360, employing planar linkage synthesis and implementing a transmission assembly featuring a compound gear train and motor

Smartphone & Headphone Charging Case | *Computer-Aided Design* **August – December 2021**
  ∗ Delivered a manufacturable design specification for a multi-use phone case, applying human-centered design process to identify the unmet needs of consumers and using tools like Autodesk Fusion 360 for CAD modeling and aPriori for cost analysis

EXTRACURRICULAR ACTIVITIES

RoboLaunch   **June – August 2024**
Speaker Engagement   *Robotics Institute, Carnegie Mellon University*

  ∗ Facilitated communication with presenters for virtual event series RoboLaunch, focused on outreach, and promoted series to Carnegie Mellon Robotics Institute community

WaggleNet   **March – December 2022**
Project Lead of Bee-Tagging Team   *Electrical and Computer Engineering Department, UIUC*

  ∗ Used AutoCAD and SolidWorks to construct an autonomous device with integrated light sensors to detect and tags bees

iRobotics RoboSub Project Team   **January – May 2022**
Co-Lead of Mechanical Team   *Electrical and Computer Engineering Department, UIUC*

  ∗ Designed an underwater vehicle in Autodesk Fusion 360 which can autonomously navigate through different tasks

AWARDS AND SCHOLARSHIPS

2024 Spring	***Dean's List***
2023 Fall	***Dean's List***
2023 Spring	***Dean's List***
2022 Spring	***Dean's List***
2021 Fall	***Dean's List***
2021 Fall	***ME170 Outstanding Achievement Awards for Excellence in Engineering Design***

CERTIFICATIONS

CITI Program   ***Course in the Protection of Human Subjects***