ANNA GARVERICK

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Education

Northwestern University, M.S. in Robotics, Expected December 2022, 4.0 GPA

Completed Courses: Embedded Systems in Robotics, Intro to Computer Vision, Robotic Manipulation, Machine Dynamics

In Progress Courses: Sensing, Navigation, and Machine Learning for Robotics (SLAM and C++), Intro to Mechatronics (C)

University of California, Davis, B.S. in Biomedical Engineering, June 2021, 3.77 GPA with Honors

Outstanding Senior in Biomedical Engineering - *for significant contributions to the learning environment*

Outstanding Leadership Award - *for significant contributions to the biomedical engineering community*

Skills

Python, C, C++, MATLAB, Robotic Operating System (ROS), Git Version Control, Linux, Solidworks/CAD, Computer Vision (OpenCV), Rapid Prototyping (3D Printing, Laser Cutting), Microcontrollers, Bioinstrumentation, Microsoft Office

Projects

Making Pancakes with a Franka Emika Panda Robot December 2021

- Integrated contributions from 4 teammates to successfully automate pancake making from batter to plate
- Utilized MoveIt Python interface and a ROS action client to to grasp a squeeze bottle, move it over a griddle, invert it, apply pressure to dispense batter, and return it to its original location
- Calibrated a RealSense camera to transform coordinates into the robot frame and generate target trajectories to pick-up tools

Finding and Grabbing a Pen with a PincherX 100 Robot September 2021

- Utilized OpenCV with a RealSense depth camera to identify a pen based on pixel color and find the estimated center point
- Calculated target joint angles using data from the Realsense and implemented single joint control to move to the identified target

Designing an Endotracheal Tube Support Device to Reduce Hospital-Acquired Pressure Injuries Dec. 2020 - June 2021

- Sought-out and surveyed 7 stakeholders to hone in on an unmet clinical need and define design constraints
- Prototyped using Solidworks CAD and Polyjet and SLA 3D printers through 4 iterations
- Tested applied force on the device using an Arduino microcontroller and simulated the resulting material fatigue with FEA analysis
- Awarded **Outstanding Senior Design Project** for developing a functional prototype that uniquely solves a demonstrated need

Experience

Research Assistant - Orthopedic Biomechanics Laboratory UC Davis Medical Center | Sept. 2018 - Sept. 2021

- Created and implemented a Python program to automate data collection and significantly improve the efficiency of data analysis
- Developed a protocol to consistently measure anatomical alignment variables and processed the intake images for 30 patients
- Built a MATLAB program to model knee implant instability
- Designed and prototyped a dual x-ray exposure switch box using Solidworks and 3D printing
- Second author on two publications (Journal of Biomechanical Engineering, Journal of Biomechanics)

President - Biomedical Engineering Society Undergraduate Chapter UC Davis | Sept. 2017 - June 2021
Previous: Vice President, Mentor/Mentee Program Chair

- Managed a 16 officer team for a club with over 200 members, focussing on strengthening the community and increasing industry involvement through new student outreach, study spaces, networking with the BME external advisory board, organizing a week-long career exploration conference and other targeted events
- Won the **BMES Outstanding Mentoring Program Award** and presented 'Best Practices' at the October 2019 BMES Annual Meeting

Intern - UC Davis Sports Medicine Human Performance Laboratory UC Davis Medical Center | Sept. 2019 - March 2020

- Assisted with client tests including body composition (dual x-ray absorptiometry), energy expenditure, and equipment fitting
- Learned to operate various exercise and metabolic equipment, including 10-lead ECGs, and analyze the resulting data
- Researched and developed gait analysis procedure and intervention for injury prevention

Intern - UC Davis Biomedical Engineering Department Summer Innovation Internship UCDMC & VMTH | June 2018 - August 2018

- Acted as a student observer while immersed in six different medical and veterinary clinics and practiced biomedical needs finding within a clinical setting, evaluating workflow, procedures, and devices, ultimately working towards developing needs statements