Jaclyn Ferguson

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Education

University of Michigan
Ann Arbor, MI

B.S.E. in Computer Science
Graduated April 2022

- Relevant coursework: Data Structures and Algorithms, User Interface Development, Computer Security, Software Design for Accessibility, Computer Vision, Machine Learning

Experience

NASA, S&K Engineering and Research
Houston, TX

Technical Intern
January 2024-Present, Seasonally

- Created and deployed a React based documentation website for the NASA Robonaut's Everybot, a low-resource FIRST Robotics Competition (FRC) robot
- Developed an automated conversion from Google Docs to Markdown for ease of documentation contribution
- Designed & manufactured the Everybot in addition to creation of the public CAD and Java robot code
- Built Accessible Modular Onshape CAD document for international FTC Everybot student use
- Volunteered time to create community swerve generator, which allowed the Everybot to automatically generate on top of the specified drivetrain
- Published hundreds of pages of technical documentation and several manuals that enabled 1314 high schools to complete robots
- Provided support to hundreds of students struggling with logistical and/or technical difficulties in construction of their robots

FIRST Robotics in Michigan (FIM)
Bloomfield Hills

Engineering Staff
August 2022 - February 2023

- Acted, Directed, & Produced 31 hours of technical instruction video
- Managed parts and material logistics for strict video production schedule
- Developed resources for Ardunio/Raspberry Pi based robots that taught students how to code robots

The Michigan Engineering Zone (MEZ)/ Z3M
Detroit, MI

Lead Robotics Coordinator
September 2018 - August 2022

- Assisted with the design, fabrication, troubleshooting of electrical issues and programming of autonomous and tele-operated modes in Java and C++ for over 60 robots
- Proposed and created a technical documentation team to produce guides and workshops for the fundamentals of programming, mechanical, and electrical skills
- Formed a team to improve the 2022 Everybot documentation, manufactured the Everybot and created a 100 page manual
- Founded a sub-organization, Z3M, obtained funding for the project through grants and captained the club to complete a robot in three days

University of Michigan
Ann Arbor, MI

Research Assistant at Computational Human Artificial Intelligence (CHAI) Lab
May 2021 - July 2022

- Developed full stack web based application used to assess and monitor impact of Parkinson's disease on patient cognitive impairment
- Designed study to evaluate application effectiveness alongside graduate students and professors
- Finished prototype which allowed users to provide a template and recorded reading to determine word level speaking errors
- Created Vue front end for clinicians to correct transcriptions and alignments for continual model improvement
- Fed Flask backend transcription data into Deepspeech ASR and custom python algorithms to generate accurate transcriptions aligned with the templates

University of Michigan
Ann Arbor, MI

Research Assistant at Dynamic Project Management Lab
May 2021 - September 2021

- Utilized Unity's ML Agent to develop a VR machine learning environment used to train Kuka 5 axis robot arms for use in a busy construction setting

Personal Projects

Yet Another Generic Swerve Library (YAGSL)

Contributor

- Developed and executed a hardware-independent approach to mitigate skew in swerve drivetrains resulting from second-order kinematics
- Optimized motor controller configurations to triple robot's maximum angular velocity while maintaining control
- Worked on Python implementation of YAGSL to expand teams language options

FRC Design Library

Contributor

- Created configurable Onshape models for multiple swerve drive modules

Liftlabs

Lead Software Engineer

- Designed electrical layout of Teensy microcontroller based swerve robot utilizing cost effective electronics
- Created embedded software to control/monitor all motors and sensors
- Set up networking to both spoof FRC robot connection or act independently

Various FRC Teams

Mentor

- Led students to design and program complex robots with high levels of autonomy
- Utilized manufacturing techniques including, 3D printing, manual machining, CNC routers, outsourced machining, and modification of off the shelf parts
- Designed code that allowed robots to aim and shoot projectiles into a small goal up to 25ft away
- Programmed several complex closed loop systems with motion profiling and superstructure collision avoidance
- Coached students during competition matches leading a first year team to attend the world championship

Skills

Languages	JavaScript (HTML, CSS, React, Vue.js), Java, Python (Flask, Pandas, NumPy, Pytorch), C++, C#
Tools	Windows, Linux, git, GitHub, VS Code, Excel, LaTeX, Unity, Blender, Onshape, Solidworks, Fusion 360 (CAM)
Machinery	CNC router, 3D printer, Lasers, Lathe, Manual Mill, Basic Preliminary Manual Machines