Kea Francis

Engineering Experience

Junior Robotics Engineer at CleanRobotics
October 2020 – January 2021

- Programmed robot implementations in C/C++ on Particle microcontroller
- Researched and suggested potential implementations

Robotics Technician at Dal-Tile Corporation
November 2019 – August 2020

- Robot area team lead responsible for communication with the molding line
- Created SOPs for robot processes and maintenance
- Created an automatically updating scheduling system and custom CMMS using MS Access with VBA and SQL
- Utilized Rhinoceros to program control of four industrial robots

Research Assistant at The University of Tennessee Knoxville
September 2017 – May 2019

- Created a user-friendly autonomous social robot to assist speech therapist when teaching children with speech impediments
- Continuously updated the Python and MIT App Inventor programs to fit the needs of the pathology department
- Updated system using the Raspberry Pi 3, running a Linux OS, to increase speed and allow easier interfacing for the parents
- Developed wireless data transmission between the Raspberry Pi and android through an RFCOMM Bluetooth protocol
- Programmed an Arduino microcontroller in C/C++ to control and create movements for the robot's servo motors

Senior Design Project for the Electric Power Research Institute (EPRI)
August 2018 – May 2019

- Improved the accuracy of an autonomous lawnmower's movements
- Introduced microcontrollers into the control system to make the overall system easier for mass production
- Designed emergency off switch and sensors to notify the device when something is obstructing the mowing path

Reliability and Maintainability Intern at Oak Ridge National Laboratory (ORNL)
May 2016 – September 2017

- Optimized FSC, the Computer Maintenance Management System (CMMS), used to schedule work orders and track assets
- Researched predictive and preventative maintenance techniques and technologies
- Created Key Performance Indicators (KPIs)
- Scheduled meetings to create a maintenance plan for the Summit supercomputer using Failure Mode Effects Analysis (FMEA)

Other Experience

Mechatronics Final Project at The University of Tennessee Knoxville
August 2018 – December 2018

- Worked on a team to develop an autonomous trashcan

Student Success Center Tutor at The University of Tennessee Knoxville
August 2016 – December 2016

- Tutored Chemistry, Matrix Algebra, and Economics

Teaching Assistant for Introduction to Programming at Belmont University
January 2015 – May 2015

- Tutored and attended class to assist students with in-class Java projects
- Reviewed tests prior to exam date

Contact Information

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GitHub:

https://github.com/kfrancis01

https://github.com/kea-cleanrobotics

Technical Skills

Python Programming

MATLAB Programming

Linux OS

Microcontrollers

MIT App Inventor

SolidWorks

VBA Programming

Ultrasound Level One Certification

Education

The University of Tennessee Knoxville | Bachelor of Science in Mechanical Engineering | **July 2015 – May 2019**

Belmont University | Engineering Physics Major | **August 2014 – May 2015**

Related Courses

Mechatronics (C/C++)

System Dynamics

Calculus I - III

Circuits and Electromechanical Components

Introduction to Programming (Java)

CAD (SolidWorks)

Community Involvement

NASA Ice Challenge RASC-AL Competition
September 2017 – June 2018

Society of Women Engineers (SWE) Scholarship Recipient
August 2016 – May 2017