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ZEYNEP SEKER

EDUCATION

Robotics Engineering | Worcester Polytechnic Institute
Mechanical Engineering | Worcester Polytechnic Institute
AUGUST 2017 – MAY 2021
GPA: 3.73/4.0

WPI Dean's List: 2018, 2019, 2020
WPI Outstanding Service Award: 2019-2020 & 2020-2021
WPI Peer Learning Assistant of the Year Honorary Mention: 2020-2021
Provost's MQP Award Honorable Mentions: Autonomous Drone Pollination (2020-2021)

EXPERIENCE

Associate Engineer |FANUC Robotics
MAY 2019 – JULY 2019
Intern at FANUC Robotics. My position was "Associate Engineer" for the summer of 2019. I was in charge of the revision of ongoing paint shop designs. I reviewed all of the modified designs and modified them on AutoCAD and prepared design folders for the customers. I also worked on the robotic arm structures and wiring schematics. I was trained on how to build and manipulate the industrial robot arms.

WPI Senior Robotics Lab Assistant | Worcester Polytechnic Institute
SEPT 2020 – PRESENT
This job requires to oversee all the other lab and student assistants, make sure the student labs are running smoothly. We have over 20 student workers, and 5 labs this year. I also provide communications between departments and staff and coordinate the accessibility and resources of the lab. I was chosen for this job due to my leadership skills and outstanding service as a lab assistant.

WPI Robotics Lab Assistant | Worcester Polytechnic Institute
NOV 2018 – SEPT 2020
This position includes stocking inventory, filling student part orders, updating inventory on our online database, preparing student laboratory kits and instructions for robotics classes. It also requires maintaining the lab's needs on a daily basis. I am promoted to be the Senior Robotics Lab Assistant.

Crimson Key Tour Guide | Worcester Polytechnic Institute
JAN 2019 – PRESENT
Tour guide for WPI's Crimson Key. This position includes giving tours and information sessions to visitors about WPI. I give high school tours, middle school tours, hold online Q&A sessions and reach out programs for international prospective students.

SKILLS

Design: AutoCAD, SolidWorks, Adobe Photoshop, Adobe Illustrator, Fusion 360, Scene Builder, ESPRIT CAM, ANSYS
Programming Languages: Python, Java, MATLAB, ROS, C++, RAPID, MathCAD, Maple, JavaFX
Agile Project Management Tools: Github Projects, Trello, Slack
Software Development Tools: IntelliJ, Eclipse, Visual Studio Code, Robot Studio, Github, Ubuntu
Prototyping: 3D Printing, Laser Cutter, Machine Shop User
Languages: Turkish (Native), English (Fluent), French (Beginner)

CLASSES AND PROJECTS

Autonomous Drone Pollination – Major Qualifying Project: I am currently working in a team of four to create an autonomous drone capable of locating multiple flowers in a region and transferring pollen between them using an end-effector. We are designing the drone from scratch and using on-board processing for dynamic image tracking.

Industrial Robotics: In this class, I learned the ABB programming language RAPID, and IDE and simulator RobotStudio. With my team, we have programmed ABB robot to palletize objects, and manipulate it to perform various tasks.

Software Engineering: I was the Project Manager on a project team designing a navigational kiosk application for *Brigham and Women's Faulkner Hospital*. As project manager, I was responsible for managing project tasks, coordinating the team, and keeping all of the members motivated. This project was led using agile methodology. I was also a Software Engineer for the team. The application used an A* Path Finding algorithm for the navigational computation and the user interface was built on Scene Builder using Java FX. All the images were designed on Adobe Photoshop. Apache Derby was used for the application database.

Advanced Design Engineering: Collaborating with iRobot about designing a testing infrastructure for their vacuum. My team's design inputs a special cotton-like material and shreds it into smaller pieces to test the vacuums' suction and collection abilities. By automating the preparation of a test environment, we increase the efficiency of testing.

Unified Robotics III (Manipulation): Programmed a 3 degrees of freedom robot arm to perform trajectories as well as image processing and dynamic camera tracking for sorting objects using MATLAB. The goal of the project was to integrate an algorithm that would calculate the forward and inverse kinematics of the arm's end effector relative to its home position to manipulate surrounding objects.

Unified Robotics IV (Navigation): Programmed a Turtlebot3 Burger to map and navigate a maze using the attached LIDAR. The robot was programmed in Python and ROS and was able to simulate an arbitrarily constructed maze and navigate through it when instructed. A* path finding, and SLAM was used to navigate through the maze and detect the surrounding construction.

Unified Robotics II (Sensing): Designed and programed a robot to detect an arbitrary flame using an IR camera. The goal of the project was to navigate through the field, detect the fire, and put the flame out using a fan. An IMU and a range finder were used to navigate the field within set boundaries.

Controls Lab Curriculum Development: I am currently working with my controls professor to create a lab structure and curriculum for undergraduate students. The lab includes a two-wheeled self-balancing robot that the students need to program and tune. This robot is programmed in C++ and MATLAB.

Embedded Systems: Used TI MSP430 microcontroller to program simple games and clocks. C++ was used to program games such as a rendition of "Space Invaders". This game was displayed through screen and controlled using a keypad.

Interactive Qualifying Project: I worked on the EV charging station implementation at WPI and projection of EV adoption on campus. My team and I interviewed institutions in Massachusetts, and surveyed WPI staff, faculty and students in order to project an estimate demand for EV charger on campus in the next 5 years.

COMPETITION PARTICIPATION

LEAP Motion – 3D Jam Competition: My team's work was published as one of the top rated at the competition. I designed a virtual hang drum in Unity and programmed it in C#. The final project was used for academic research purposes by others.

ACTIVITIES

Rho Beta Epsilon (Robotics Honor Society) – Public Relations
Turkish Student Association – President
Women in Robotics Engineering (WPI) – Member
Crimson Key (WPI) – Tour Guide
Society of Women Engineers – Member
International Student Council – Member
Women in Robotics Engineering (Boston) – Member