Lumbini Parnas

· ROBOTICS ENGINEER ·

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"Be the change that you wish to see in the world."

OBJECTIVE

Robotics Engineer seeking a full-time position starting in June 2017. Experienced in multiple programming languages, software environments and manufacturing design.

EDUCATION

Worcester Polytechnic Institute   *Massachusetts, U.S.A*

ROBOTICS ENGINEERING MAJOR   *2013 - May 2017*

- Dean's List 2015-2016, GPA: 3.25

International School of Kenya   *Nairobi, Kenya*

INTERNATIONAL BACCALAUREATE   *2011 - 2013*

WORK EXPERIENCE

Indian Space Research Organization - Satellite Centre (ISAC)   *Bangalore, India*

INTERNSHIP - INDUSTRIAL TRAINEE   *June 2016 - August 2016*

- Worked in Spacecraft Mechanisms group on solar array deployment techniques.
- Analyzed regolith simulant to evaluate technical challenges involved in developing a Robotic Lunar colony.
- Trained with other engineering teams to learn about satellite development process.

Worcester Polytechnic Institute - WPI Fund   *Massachusetts, U.S.A*

STUDENT CALLER   *October 2015 - Present*

- Establishing and maintaining contact with WPI Alumni.
- Raising funds for financial aid and other on-campus resources.

PLATFORMS AND SOFTWARE

PROGRAMMING LANGUAGES: C/ C++, PYTHON, JAVA, SQL

PROGRAMMING TOOLS: JAVAFX, JAVA SWING, GIT, ROS, UML

EMBEDDED SYSTEMS: ARDUINO, RASPBERRYPI, MSP430, ATMEL AVR

DESIGN TOOLS: SOLIDWORKS, AUTODESK INVENTOR, AUTOCAD, LABVIEW, MATLAB, SIMULINK, PHOTOSHOP, LATEX

MACHINING: ESPRIT, CNC MILL, UNGUARDED EQUIPMENT, LASER CUTTER, 3D PRINTER

OTHER TOOLS: MICROSOFT OFFICE, MICROSOFT WINDOWS, LINUX, MACOS

ACTIVITIES AND ORGANIZATIONS

2016 - Present	**Rho Beta Epsilon - Robotics Engineering Honor Society**
2017 - Present	**American Institute of Aeronautics and Astronautics (AIAA)**
2015 - 2016	**Satellite Development Club** Command and Data Handling
2014 - 2016	**Robokids** Member

MRI Compatible Fiber Optic Force Sensing
MAJOR QUALIFYING PROJECT

Massachusetts, U.S.A
2016 - Present

- Developed an optical force sensing technique using fiber optics to study the force profiles of tissue for needle guidance during a MRI biopsy.
- Designed a fixture and performed finite element analysis (FEA) to assess strain compatibility with the Fabry-Perot Interferometry sensors.
- Designed a structure to hold and align optical components and a custom PCB.

ToasterIO - Internet of Things
HACKATHON GRAND PRIZE WINNER - MLH HACK@WPI 2017

Massachusetts, U.S.A
Jan 13th-15th 2017

- Modified a toaster to work with the Amazon Echo and a Raspberry Pi 3.
- Built a pulley system using recycled parts and a DC motor to autonomously pull down the knob.
- Designed a circuit board by reverse engineering the toaster to connect it to the Raspberry Pi.

2-DOF Arm Manipulation
UNIFIED ROBOTICS - MANIPULATION

Massachusetts, U.S.A
Fall 2016

- Designed and implemented a control system for a 2-DOF automated arm to pick up and weigh blocks moving on a conveyor belt.
- Included embedded programming on the AVR ATmega644P which allowed interfacing with MATLAB and peripherals.
- Used PID control, forward and inverse kinematics, infrared sensing and current sensing to efficiently perform the task.

Path Planning and Mapping
UNIFIED ROBOTICS - NAVIGATION

Massachusetts, U.S.A
Spring 2016

- Used a turtlebot equipped with a Kinect and a Kobuki base to map and navigate an unknown area.
- Implemented a SLAM algorithm using A* and frontier exploration on a ROS and Python platform.

Fire Fighting Robot
UNIFIED ROBOTICS - SENSING

Massachusetts, U.S.A
Spring 2015

- Designed, built and programmed a robot that navigated through a maze to find and extinguish a flame.
- Used ultrasonic sensors and heat sensors to successfully navigate and detect fire.
- A combination of odometry and accelerometer was used to report the location of the robot and the fire.

Nuclear Reactor Robot
UNIFIED ROBOTICS - ACTUATION

Massachusetts, U.S.A
Spring 2015

- Designed and built a robot to change fuel rods in a platform that simulated a real-world automated nuclear plant.
- The robot autonomously navigated through the plant using a line following algorithm.
- Built a Peaucellier-Lipkin arm to manipulate fuel rods and an Ackermann steering drivetrain for mobility.

Phobos Exploration Mission Design
SPACECRAFT MISSION ANALYSIS AND DESIGN

Massachusetts, U.S.A
Spring 2017

- Designed a spacecraft and mission to orbit Mars and trail its largest moon, Phobos.
- Focused on the baseline design for attitude control system by evaluating the moment of inertias of the spacecraft.
- Designed a trajectory for low thrust propulsion which assisted in developing a baseline for the propulsion and power systems.

Get There - WPI Navigation Application
PROJECT MANAGER & DEVELOPER

Massachusetts, U.S.A
Fall 2015

- Developed a desktop application for navigating the WPI campus in Java.
- Utilized Java Swing to implement the GUI design.
- Used Dijkstra's algorithm for path calculations.
- Heavily involved in the integration of the back-end and front-end subsystems.