**Issac Mejia**

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**EDUCATION**

**University of California, Riverside** **GPA: 3.54**

**Bachelor of Science, Mechanical Engineering** *concentration in Design and Manufacturing* June 2023

**TECHNICAL SKILLS**

**Software:** AutoCAD, SolidWorks, COMSOL Multiphysics, Bluebeam Revu, Microsoft Office Suite, Geographical Information Systems

**Programming:** MATLAB, Simulink, Arduino, R Studio, Python, LT Spice, LabView

**Certified SOLIDWORKS Associate in Mechanical Computer Aided Design and Additive Manufacturing**

**WORK EXPERIENCE**

**Engineering Intern,** *Eastern Municipal Water District, Perris, CA* June 2022 – October 2022

• Collaborated with a team of 5 professional engineers in the design and construction of District water projects.

• Utilized Bill of Materials and bid proposals to create a functional spreadsheet for cost estimating to assist with preliminary design.

• Developed a database that allowed for easy access to previous project details for use in future project preliminary design.

• Utilized **GIS** to map projects and potential pipeline routes to facilitate project design and agency coordination.

• Revised existing drawing standards and specifications using **Bluebeam** **Revu** to allow for the inclusion of new developments.

• Reviewed and expanded the District’s Approved Materials List to include new items for future project consideration.

• Evaluated compliance with applicable laws and standards, reviewed quality, and provided recommendations to project drawings.

• Worked with external agencies to acquire information and documentation to be utilized for the design of a pipeline project.

**Group Fitness Instructor,** *University of California, Riverside: FITWELL* June 2023 - Present

• Planned and prepared structured workout routines involving appropriate and engaging exercises aligned with the class’s goals.

• Led exercise sessions, offering a variety of workout styles such as cardio, strength training, and cycling.

• Created safe and inclusive environments by prioritizing safety and accommodating participants with varying fitness levels.

• Consulted clients regarding their fitness objectives and created workout routines based on the client's needs and abilities.

**Resident Advisor,** *University of California, Riverside: Residential Life* August 2021 – June 2023

• Worked in a highly collaborative environment to create and facilitate programs that addressed professional and personal growth.

• Encouraged and enforced compliance with community standards to help maintain a safe and inclusive environment.

• Served as a leadership advisor and mentor to over 50 students and participated in training on inclusive diversity practices.

• Interviewed potential Advising Directors and Resident Directors

• Proactively addressed various security issues and de-escalated crisis situations

• Collaborated with various departments including Dining Services, Residential Services, and maintenance to implement programs.

**Research and Engineering Experience**

**Autonomous Delivery Robot,** UC Riverside January 2023 – June 2023

• Worked in a team of 3 mechanical engineers to develop an Autonomous Delivery Robot for the University of California, Riverside.

• Developed an autonomous navigation system that utilizes GPS and ultrasonic sensors to implement simultaneous localization and mapping of the robot’s environment and a Breadth-First-Search Algorithm for path planning and optimization utilizing **Arduino**.

• Developed an object detection and avoidance system utilizing ultrasonic sensors that implemented a Bug algorithm.

• Determined construction materials for the robot considering budget, the properties of various materials, and load requirements.

• Constructed, assembled, and simulated the body of the robot utilizing **SolidWorks**, created part drawings for the robot.

• Performed Finite Element Analysis on parts to identify static failure and deformation, buckling, fatigue, and vibration analysis.

• Documented project from conceptualization to final design including software, part drawings, and failure mode effects analysis.

• Presented the finalized design at the University of California, Riverside’s Mechanical Engineering Senior Design Poster Exhibition.

**Robotic Planning and Kinematics,** UC Riverside September 2022 – December 2022

• Utilized function blocks in **Simulink** to create a block diagram model for the dynamics of a unicycle and differential-drive robot.

• Developed autonomous navigation software for a multilink robot to sample its environment and detect and avoid obstacles.

• Constructed a two-link arm mechanism and controlled it utilizing DC motors, in **MATLAB** plotted the configuration space.

• Constructed a Breadth-First-Search Algorithm in **MATLAB** to plan the path for a robot in an environment with obstacles.

**Mechanical Engineering Modeling and Analysis,** UC Riverside January 2022 – March 2022

• Utilized **MATLAB** to compute the shear stress resulting from the thermal contraction in the tiles of the Space Shuttle Columbia

• Developed a **MATLAB** function that used the 4th Order Runge-Kutta Method to perform univariate linear regression on a data set.

• Utilized **MATLAB** to create a function that solved for roots using the Bisection and Newton Raphson Methods.

**Machine Design,** UC Riverside November 2021 - January 2022

• Constructed, assembled, and simulated the parts for a lightweight solar panel cleaning device utilizing **SolidWorks**.

• Analyzed engineering drawings and utilized **SolidWorks** to assemble a 3D model of a V6 Engine.

• Utilized **AutoCAD** to create electrical schematics for an alarm circuit, an electrical control panel, and wiring for a house.

**UCR’s Dynamic Genome Program, Research Assistant**  January 2020 – March 2020

• Worked in a team of 4 peers to determine the effects of a mutated kinase on the development of roots.

• Conducted Polymerase Chain Reactions to amplify a mutated gene and verified experimental results through Gel Electrophoresis.

• Presented the experiment and results to a peer symposium and answered any questions regarding the research conducted.

**Overview of Bioengineering,** UC Riverside September 2020 – December 2020

• Constructed and programmed a heart rate monitoring device that utilized an **Arduino** and a photoresistor to calculate the frequency of dilation of a user’s blood vessels.

**Cutie Hack 2020**  May 2020

• Worked with a team of 3 engineers to construct an alarm clock with an automated light switch utilizing an **Arduino**.

**UCR Department of Chemistry,** Lab Intern  June 2018 – July 2018

• Worked alongside graduate students to design and conduct experiments that created ligands, then assessed whether catalytic properties were improved

• Conducted mass spectrometry and analyzed mass spectrums to determine molecular composition of the created ligands