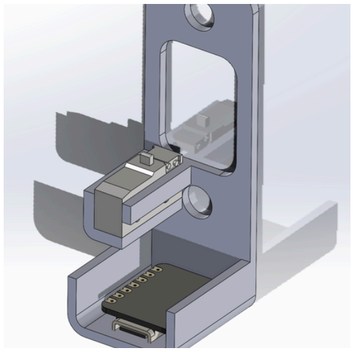
CRISS AZER

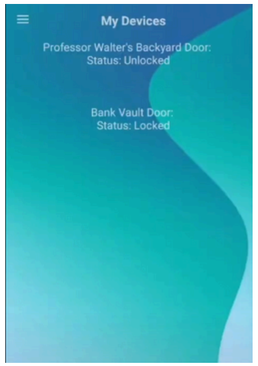
MECHANICAL ENGINEERING AT THE UNIVERSITY OF CALIFORNIA, IRVINE

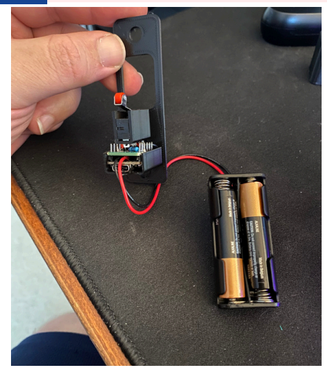
cazerhab@uci.edu
linkedin.com/in/crissazer
(714) 936 - 1450

INVASIVE SMART DOOR LOCK KIT - SARATECH

CLICK THE SARATECH LOGO TO LEARN MORE







What?

- Design an invasive smart lock kit that fits 80% of deadbolt locks.
- The invasive lock must notify the user whether their door is locked or unlocked
- The Invasive Smart Door Lock Kit must be encryped

How?

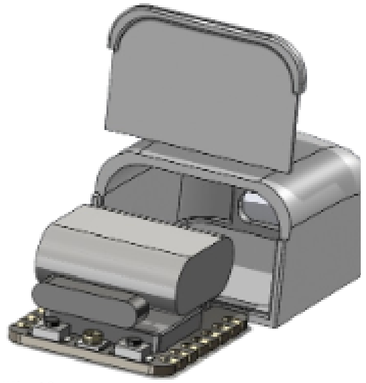
- Used **SolidWorks** to design this Smart Door Lock Kit
- Worked with a team of four to program the smart lock using **Flutter** for the android and apple app and AWS Studio for the MQTT Server

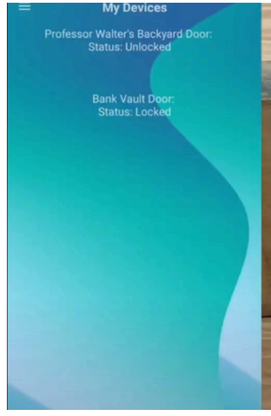
Results

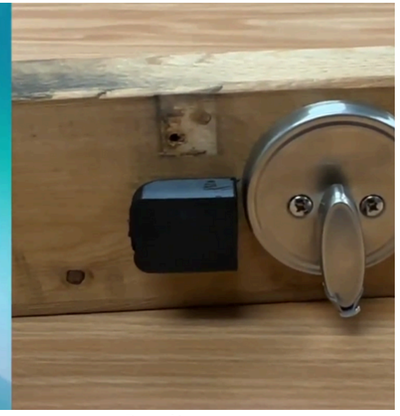
- The design and app fulfilled its purpose with it being sold to manufacturers for $25 compared to the average $50 smart lock.
- The smart lock kit is compatible with 90% of deadbolt locks.
- The invasive Smart Door Lock Kit is encrypted with an SQL Database

NON-INVASIVE SMART DOOR LOCK KIT - SARATECH

CLICK THE SARATECH LOGO TO LEARN MORE







What?

- Design a non-invasive smart lock kit that fits 80% of deadbolt locks.
- The invasive lock must notify the user whether their door is locked or unlocked

How?

- Designed on **SolidWorks a non-invasive smart door lock kit that mounts next to a deadbolt lock**
- Programmed using **Android Studio** with languages such as XML as the Frontend and Java as the Backend to connect to the MQTT Server

Results

- The cost to manufacture was $2.50 compared to a twenty-dollar cost, and it is primarily used for apartment owners who can't alter their doors to check their lock status.

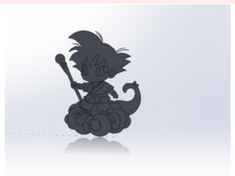
CRISS AZER

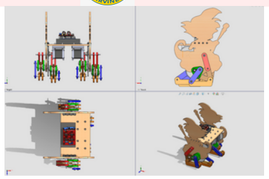
MECHANICAL ENGINEERING AT THE UNIVERSITY OF CALIFORNIA, IRVINE

cazerhab@uci.edu
linkedin.com/in/crissazer
(714) 936 - 3362

MECHANICAL WALKER - MAE 183

CLICK THE UCI LOGO TO LEARN MORE





What?

- Design a Mechanical Walker Robot that can navigate through obstacles and can last for more than one hour without recharging.
- The Walker must use for legs for steering.

How?

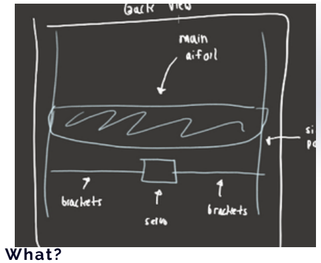
- Used **SolidWorks** to design fixture
- Used **Arduino** for electrical structure
- Implemented **DFA** principles to reduce product assembly cost

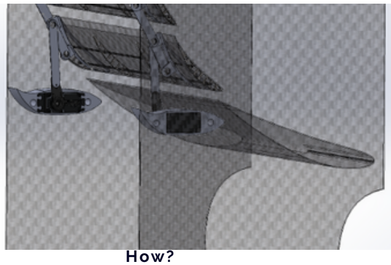
Results

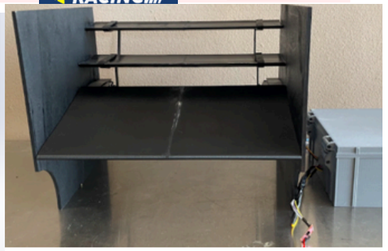
- Was able to complete the course within one minute
- Took first place in overall course-wide robot competition against 25 teams

ANTEATER FORMULA RACING ACTUATING SPOILER

CLICK THE UCI ANTEATER FORMULA RACING LOGO TO LEARN MORE







What?

- Design an actuated spoiler that adjusts to the optimal angle of attack for maximum lift and drag.
- Ensure the actuated spoiler system responds dynamically to varying speeds and aerodynamic conditions for optimal performance.

How?

- Used **SolidWorks** to the linkage system for the actuated spoiler
- Use an air pressure sensor to determine the proper angle of attack to maximize lift and drag coefficients

Results

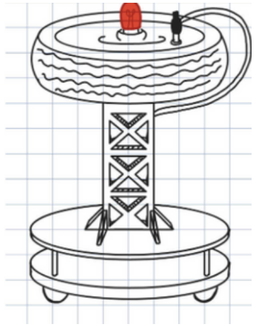
- Reduced servo response time by 10%, ensuring quicker adjustments to aerodynamic conditions.
- Enhanced lift and drag by 15% using air pressure sensor adjustments from the wind tunnel at UCI.

CRISS AZER

MECHANICAL ENGINEERING AT THE UNIVERSITY OF CALIFORNIA, IRVINE

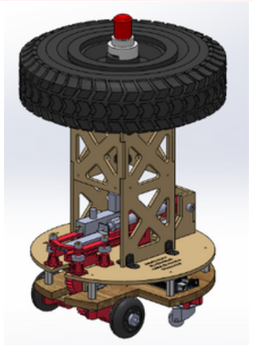
cazerhab@uci.edu
linkedin.com/in/crissazer
(714) 936 - 3362

AUTONOMOUS PISTON PROJECT



What?

- Design an autonomously actuated robot that can navigate an obstacle course using a specified direction for 25 yards
- Use a servo for steering, and a single pneumatic cylinder for propulsion.
- Tire must be 16 inches above the ground at all times.
- The maximum diameter must be 12 inches in diameter and must withstand collisions from other robots.



How?

- Designed on Solidworks and implemented one way bearing.
- Used Arduino and several sensors for electrical infrastructure
- Worked with a team of 4 to laser cut, structure, wire circuit and code magnetometer/servo using Arduino
- Using ANSYS, I analyzed the stress and strain on the robot's chassis to enhance the parts, ensuring they do not damage the robot.

Results

- Took first place in overall course-wide robot competition against 38 teams
- Robot successfully stayed within course and withstood collisions from other robots by lowering the center of gravity.
- Found suitable spring constant and piston fire interval in order to maximize speed and power conservation