



Electric Bike (E-Bike) Charging and Docking Station

Team 7-ECE, 28-ME

Bryan Castro, Justin Johnson, Seve Kim, Jacob Knoblauch, Bilal Rafiq



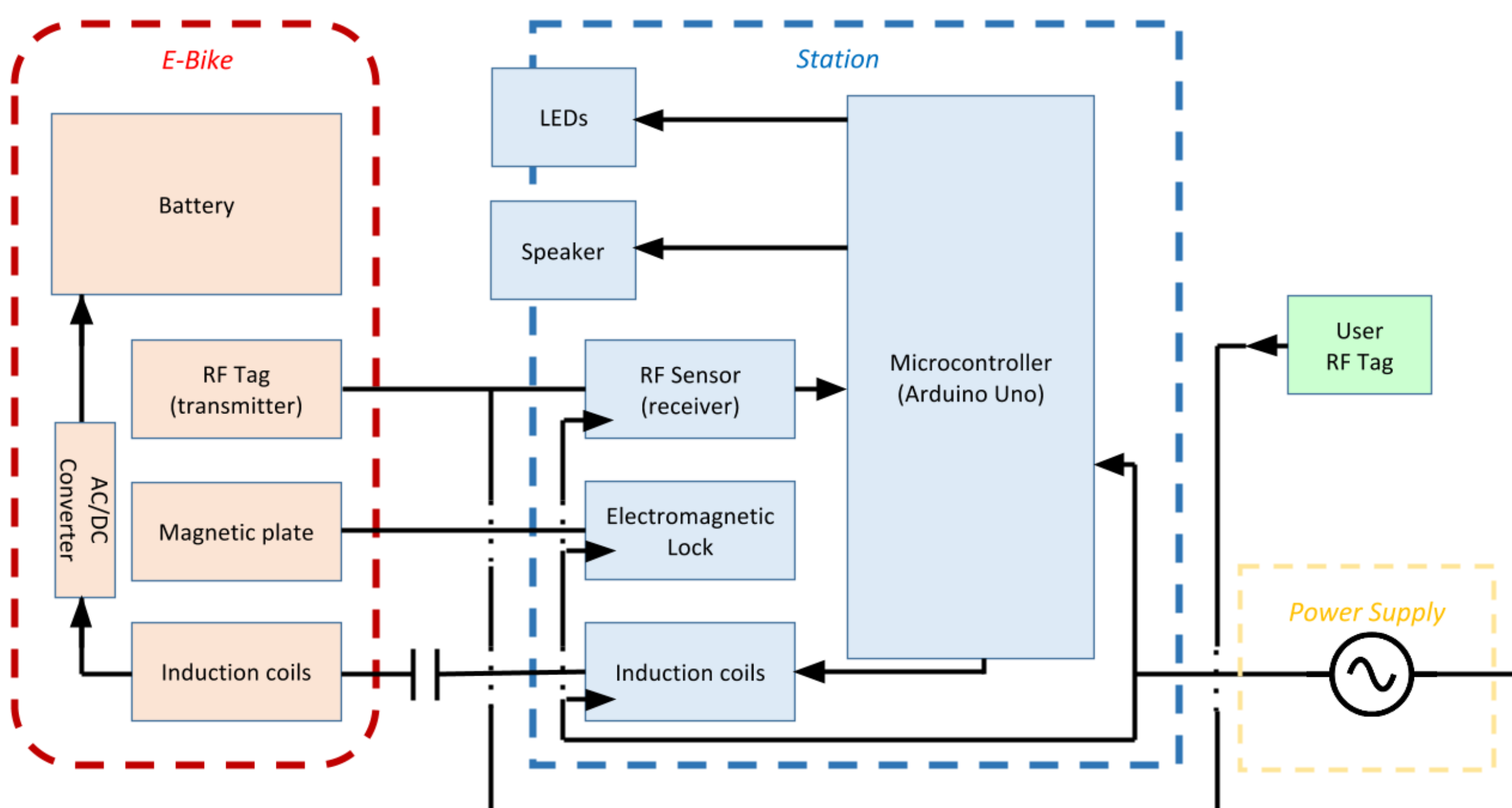
Background

- Bike sharing systems are becoming a very popular mode of public transportation
- Efficient Systems, LLC intends to provide alternative transportation solutions through electric bicycles
- Efficient Systems, LLC established e-bike sharing system currently used in Colombia
- Seeks to update traditional bike stations design with more user friendly technology

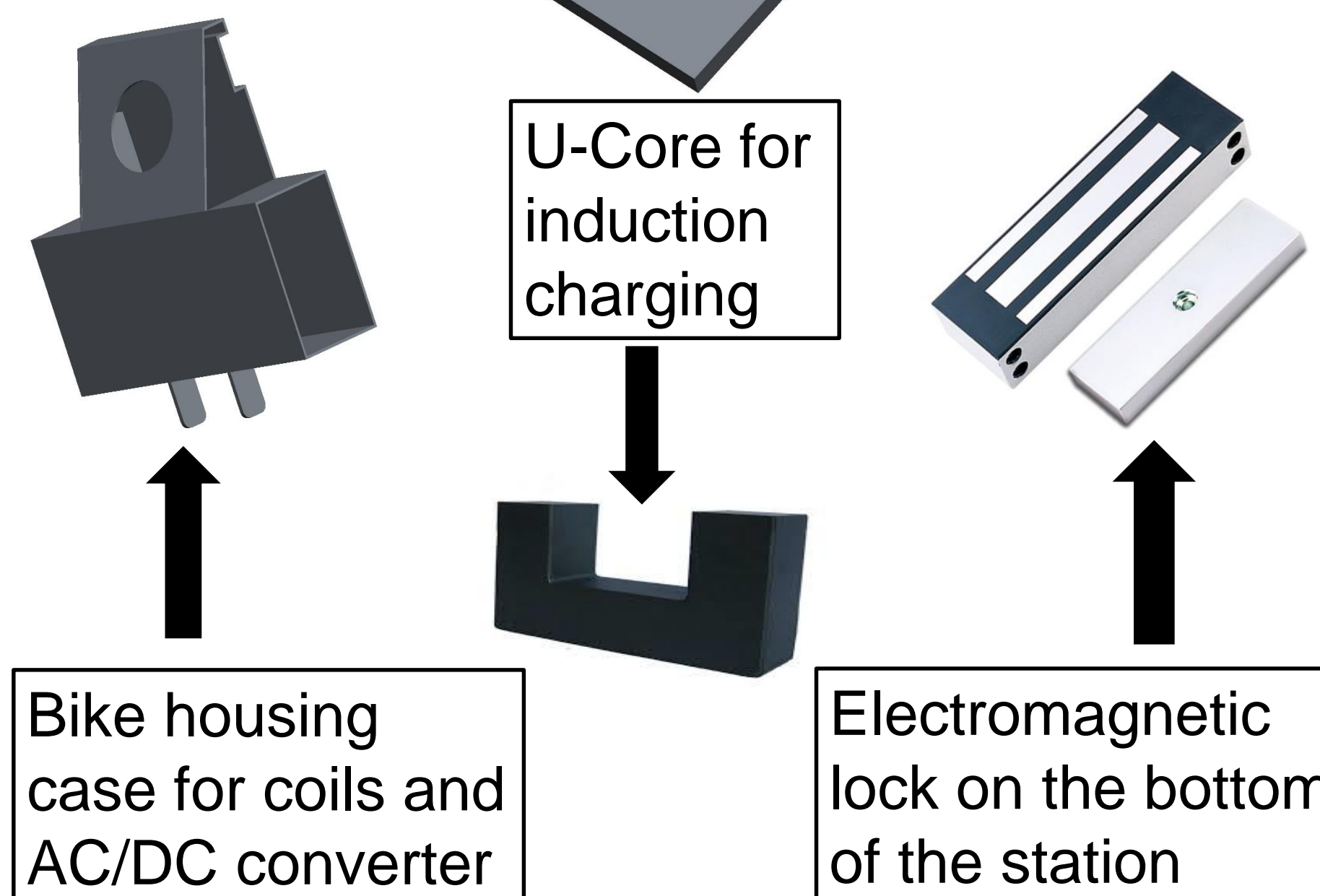
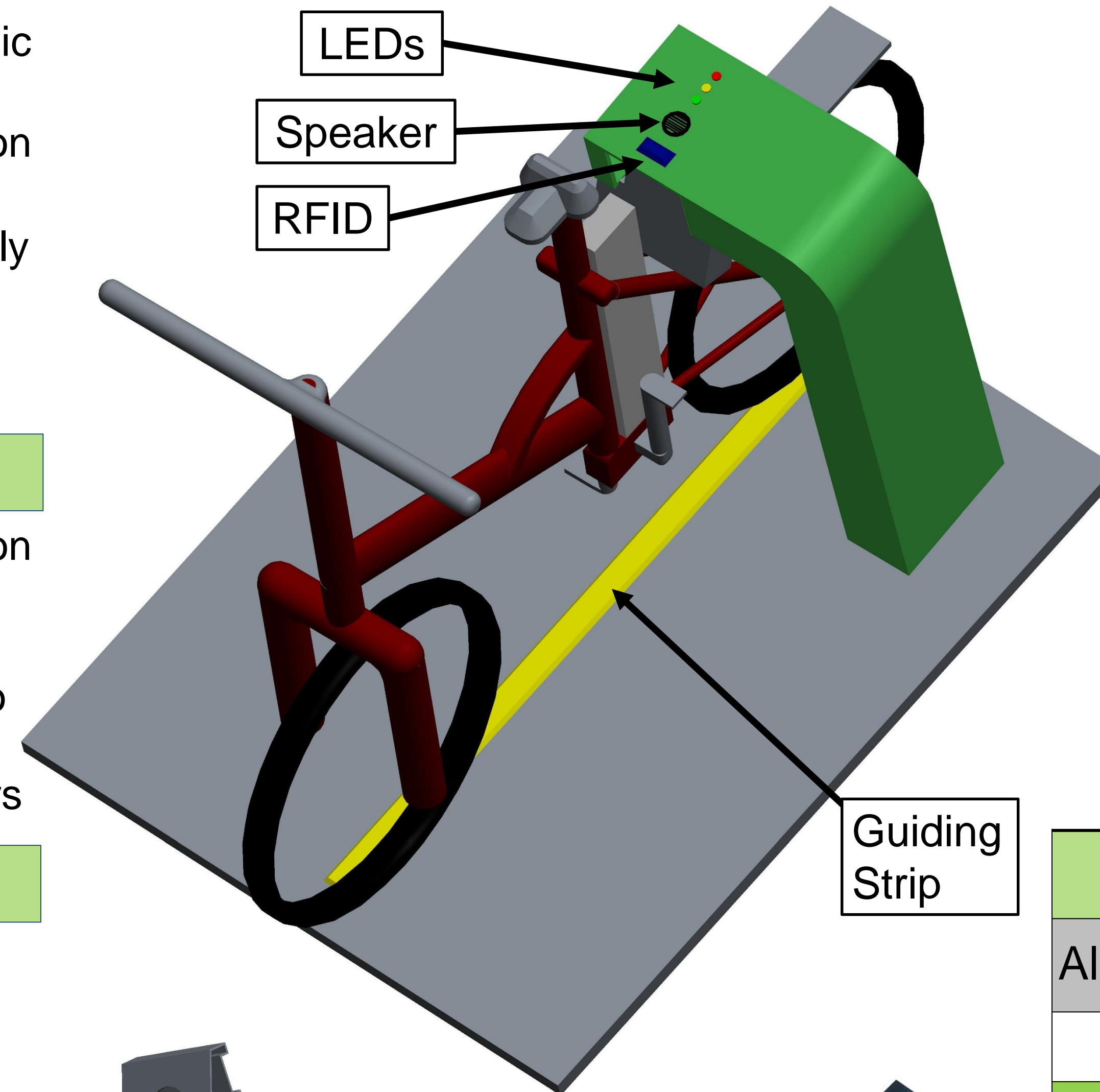
Purpose

- Design a bike station capable of locking bicycle and charging Li-Ion battery using wireless charging through induction
- Create a system that operates through minimal user input
- Conceive a modular station design that can be easily replicated to fit customer's needs
- Build a visually and technologically appealing station for end-users

System Overview



Station Design



Features

- RFID Sensor*
- Unlock and lock the E-bike
- Speaker*
- Alert user in certain situations
 - Constant beeping = There is an issue
 - 3-tone high beeps = Bike locked
 - 3-tone low beeps = Bike unlocked
- LED Indicators*
- Red = Bike locked
 - Yellow = Bike out of service/charging
 - Green = Fully charged/available
- Induction Coils*
- On the station and on the bike using U-core

Project Budget

Allocated Project Costs	\$1,000
Total Project Costs	\$615
Remaining Balance	\$385

Future Work

- Unique code for each bike for tracking
- Data structure to communicate with website for remote access
- Further research and development on high power transfer for induction charging
- Improve charging time of battery