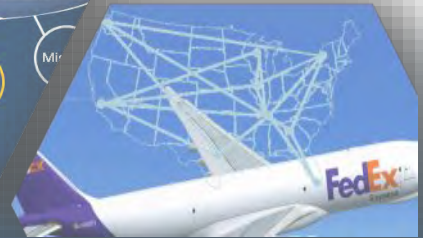
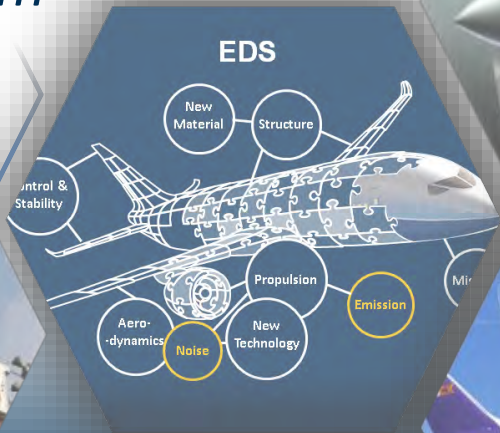
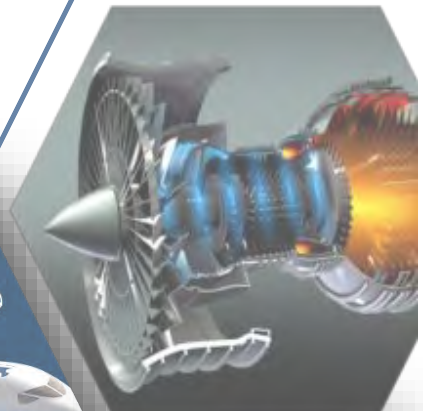


Current Transformer Sensor

Niha Yendamuri

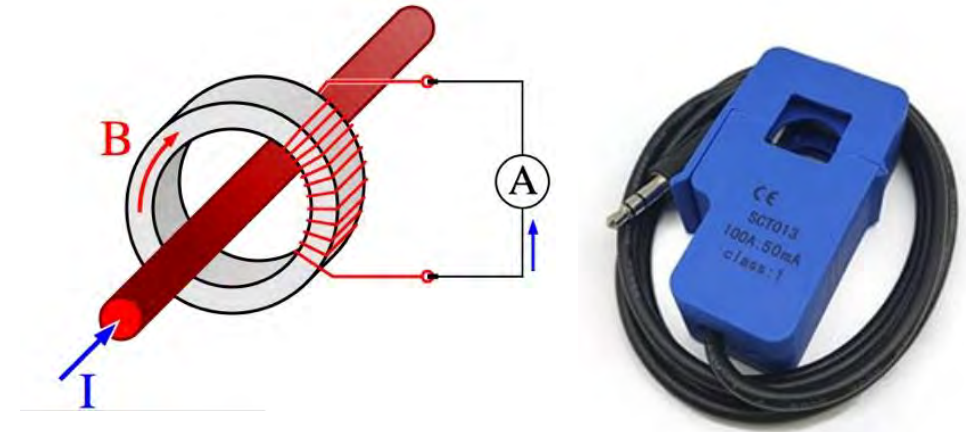
2024 Kendeda Microgrant Symposium



- Did undergraduate research with the EIDE group and worked on a current transformer sensor
- Goal/Motivation:
 - Develop low cost and accurate CT sensors that can be accessible to more people such as small businesses or organizations/individuals with limited budgets
 - Allows for more energy monitoring and management, checking the operation of electrical systems, data collection of energy usage

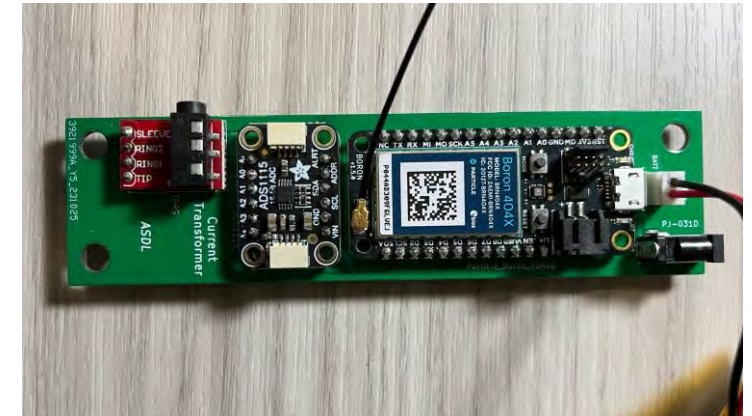
- **Current Transformer:**

- Clips around the primary wire and when there is current flowing through the wire, it drives a secondary current in the device
- Can measure up to 100 Amperes in the primary circuit



- **Development Board:**

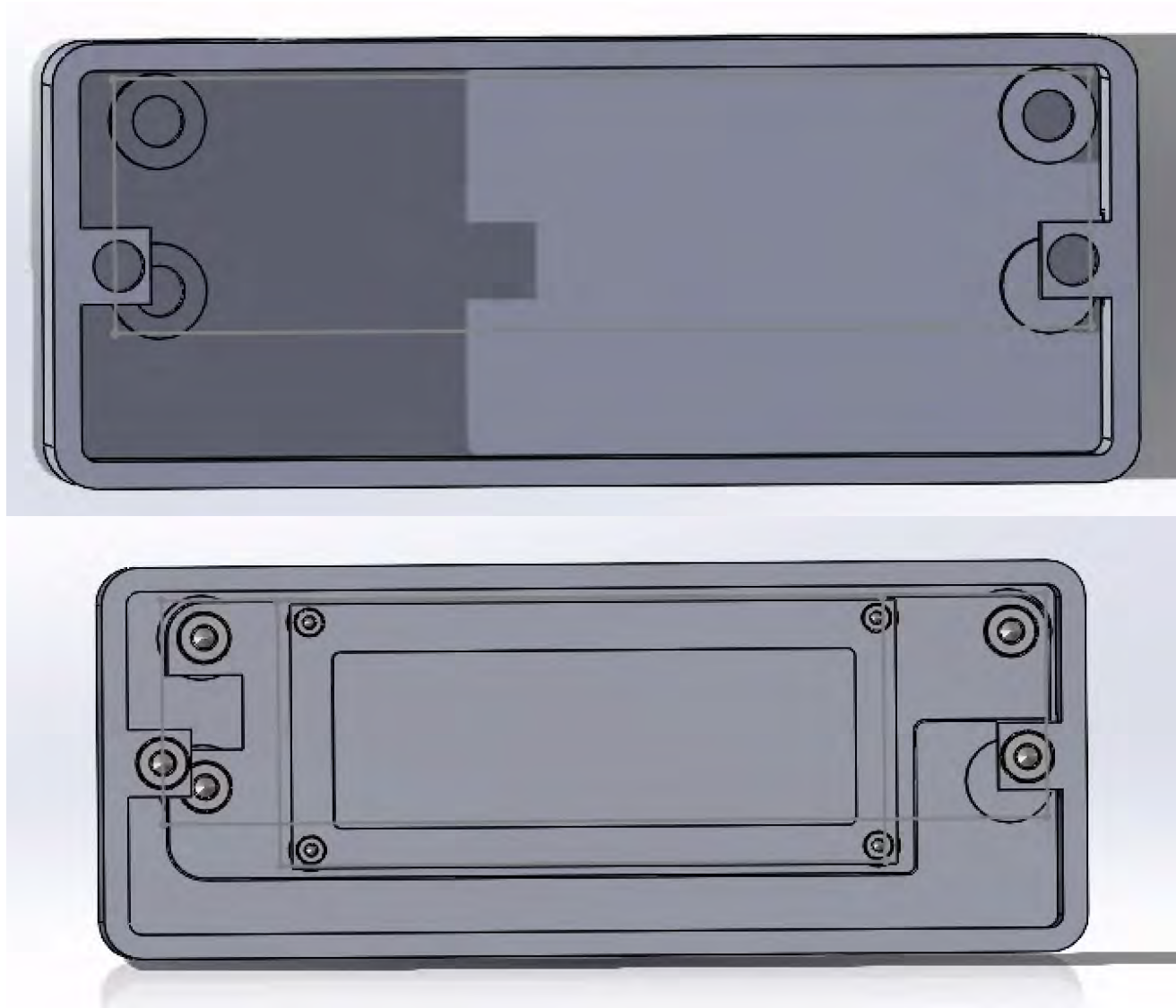
- Uses an LTE connection after collecting data from CT device to store the data
- Interfaces with the CT device through an audio jack port on the PCB with the board
- Component on the PCB allows sensor to be plugged in and power the board to start reading in data from CT device

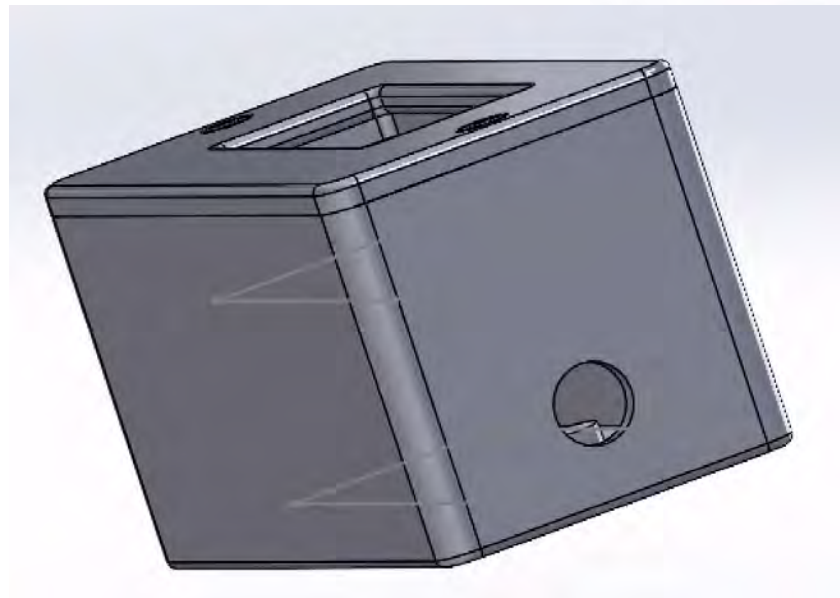
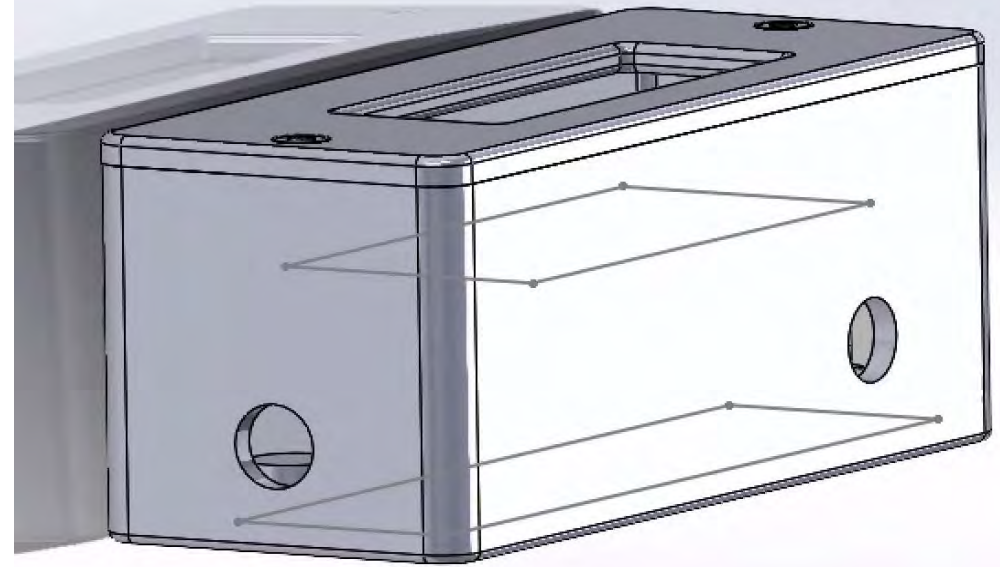


- Coming into the project, hardware and software was already completed
- Main Task:
 - Develop a casing for the sensor's PCB and other components that was simple and appealing
 - Display information about what the sensor was measuring
- Timeline:
 - Learned CAD and Solidworks through tutorials
 - Researched into different kinds of displays that are compatible with development boards
 - Came up with a mounting solution for the sensor when collecting data
- LCD Display: I2C communication interface, low-cost



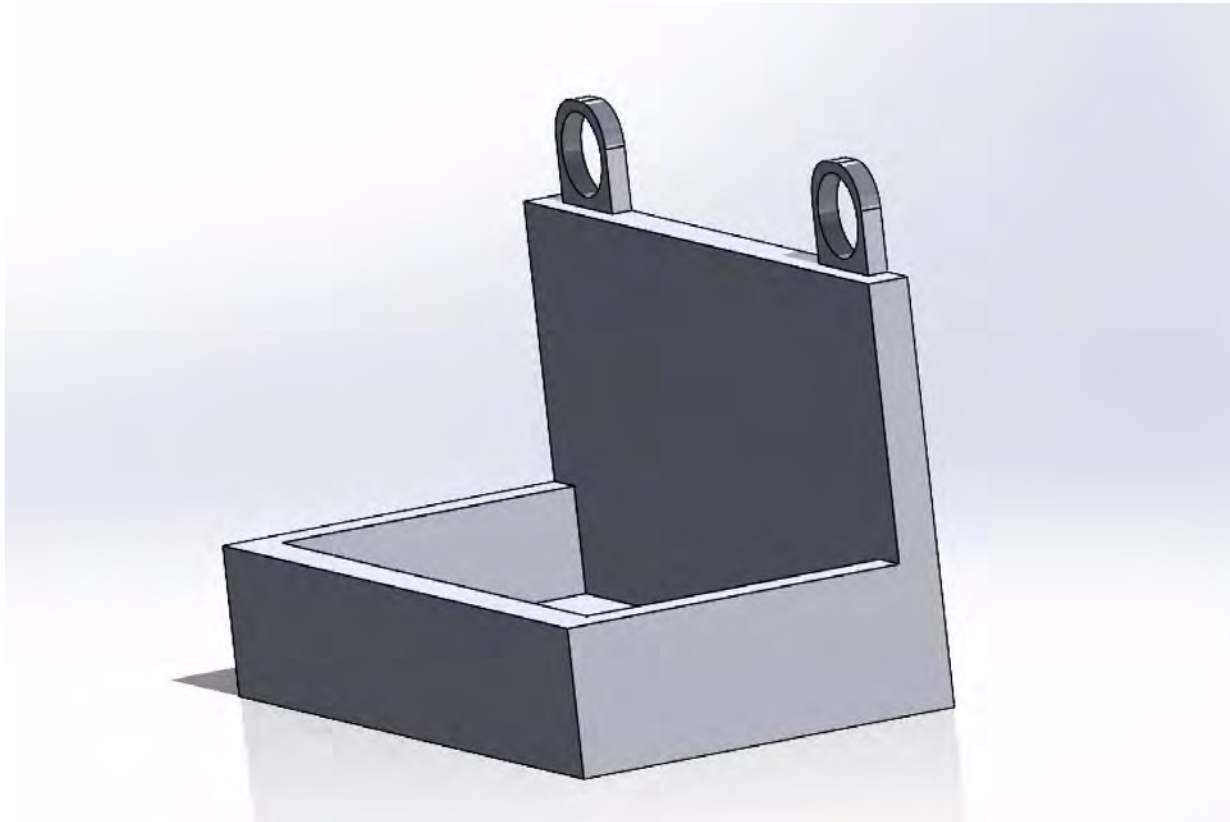
- Dimensions: 2.1 inches x 5.28 inches x 2.0 inches



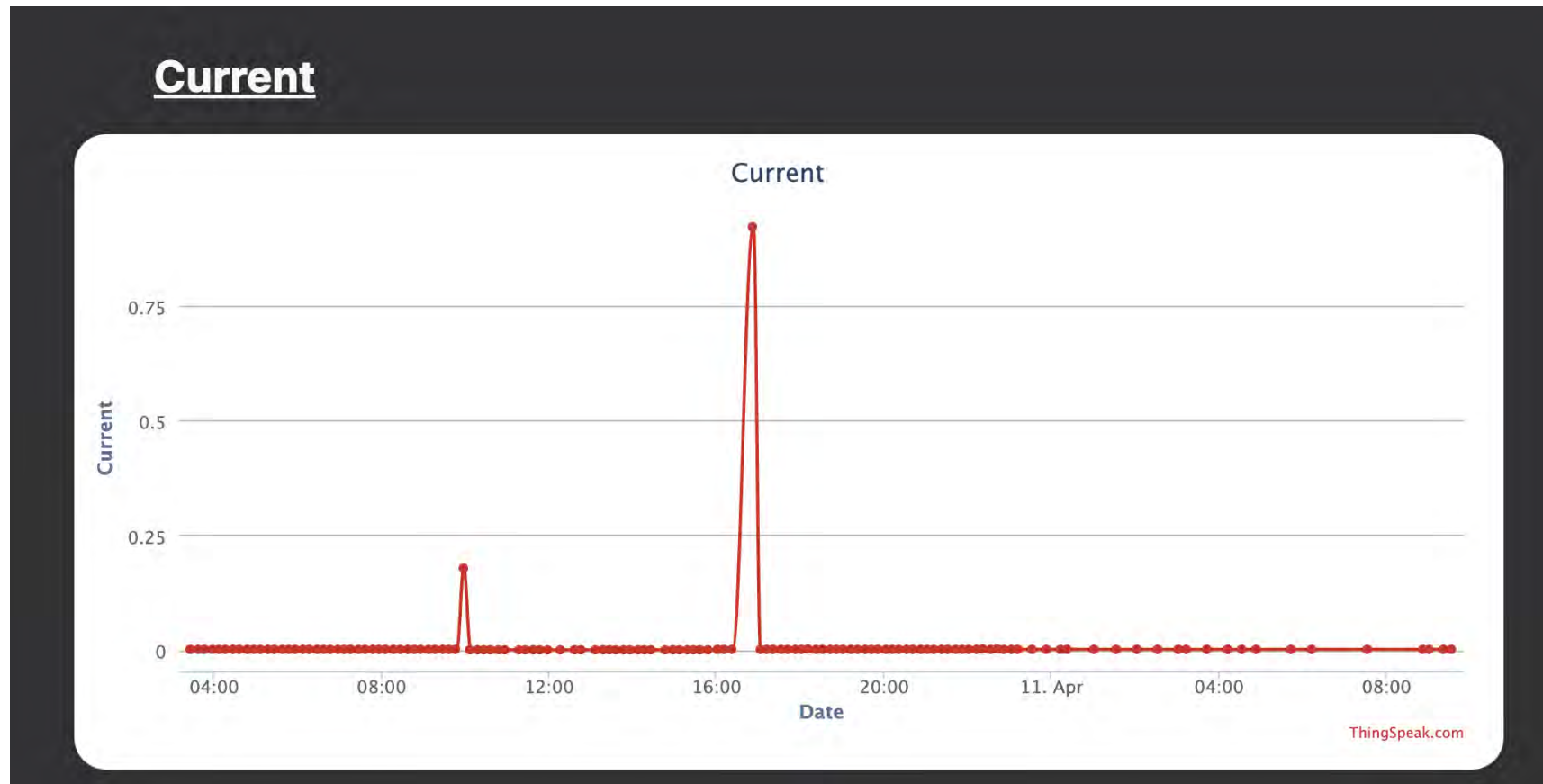


Mounting Shelf

- Mounting Solution: While sensor is collecting data, it can sit on this shelf
 - Sensor will likely not get damaged when mounted to a wall
 - Allows the sensor to measure the current in many different places



- Measured current of different devices – real time data obtained by sensor shown below
- More rigorous testing needs to be done with the sensor



Thank you!

Acknowledgments: Kendeda Building Advisory Board, ASDL IoT Team, Dr. Lewe, Dr. Duncan, Hruday Shah