LUTRON RadioRA ML Edge Computer

SUMMARY

In-office work has grown more inconsistent due to remote work. This project generates a predictive set of data to determine when lights should or should not be active. This allows for customer provided data sets for cross-validation of actual Lutron control inputs. This project serves as an ML extension to a decade of lighting control systems that have been built.

CHALLENGE

- **Inconsistent in-office work**
  - This has led to an increase of electricity during times when the lights are not needed
- **Constantly Changing Seating Arrangements**
  - Our teammates frequently change their seating locations every 3-6 months. There is a need for a model that can be updated regularly to allow for updated seating arrangements.
- **Cloud Solution to Increase Up-Time**
  - This project focuses on a cloud-based solution in order to increase up-time and allow for quicker development of improvements.

SOLUTION

Lutron IoT events are sent to AWS IoT Core to be processed. Each night an AWS Glue job runs a batch process to combine the events from the day into Parquet files in S3. AWS SageMaker then uses this S3 bucket to grab the data for analysis and model hosting. We also implemented an Athena set-up for running ad-hoc queries and analysis outside of the SageMaker workflow. From here, predictions are output into S3 and then relayed back to the lights each hour necessary to implement the prediction of turning the lights off.

RESULTS

The results of our work has been an automated solution for capturing Lutron light events and acting on predictions for future light events. By implementing this solution energy costs have been able to be reduced by 20%. We've also been able to make our development team's time 10x more efficient by implementing an automated pipeline for deployment through AWS cloud services. Additionally, documentation has been created to allow other teammates to onboard onto the project quickly.