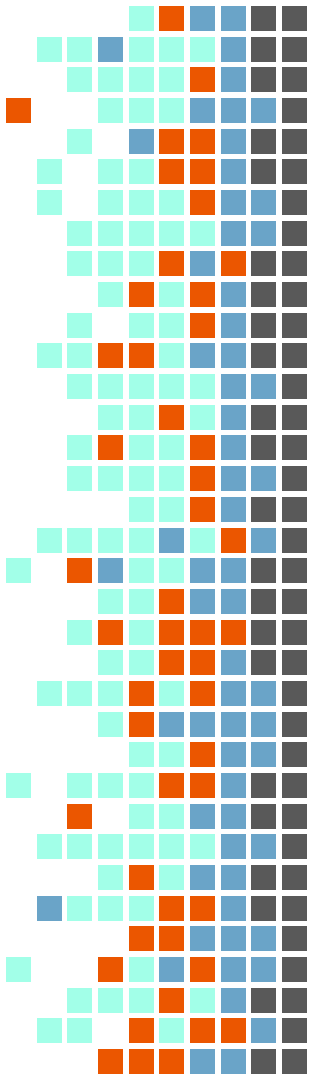
EpiData Winter 2023 Demo Day Deliverable

March 13



Meet the Team

Jane Zou

Alex Chen

Anvesha Dutta

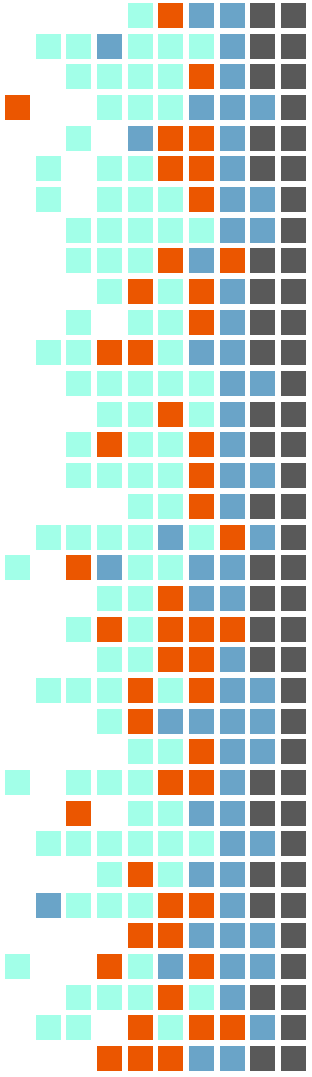
Gauresh Kapoor

Project Scope

- **Internet of Things:** collect and ingest data across multiple devices, apply predictions on data samples
  - Applications: manufacturing, energy management, building automation

- **Fall Progress:** download, become familiar with EpiData

- **Winter Goals:**
  - Develop AI/ML models on streaming IoT data from more comprehensive time series datasets

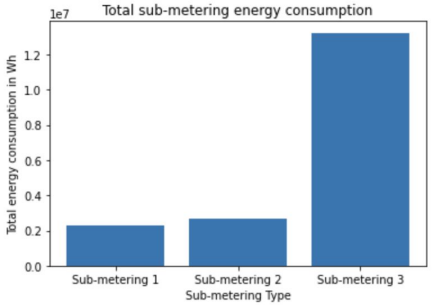


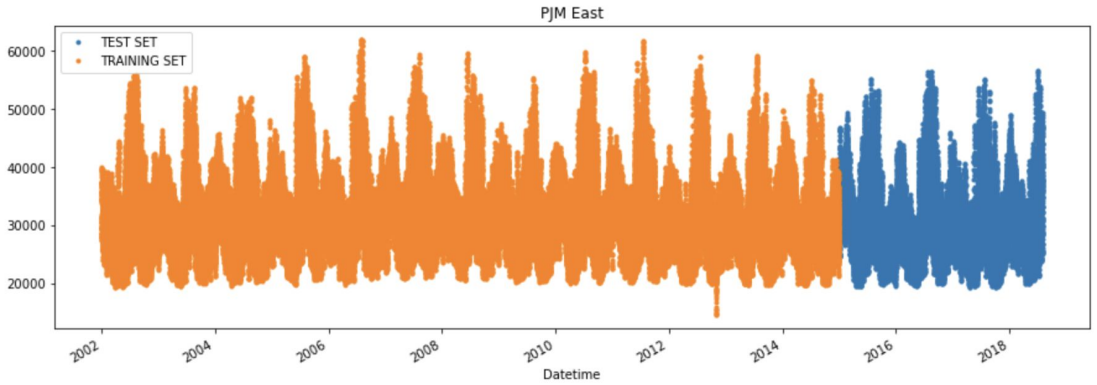
Exploratory Data Analysis

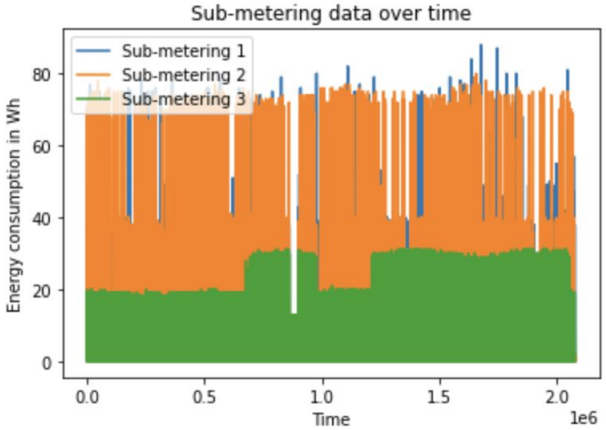
	Sub_metering_3	Sub_metering_3_na
Sub_metering_3	1.000000e+00	-8.401651e-16
Sub_metering_3_na	-8.401651e-16	1.000000e+00

- **Regression:** 4-year household energy power consumption

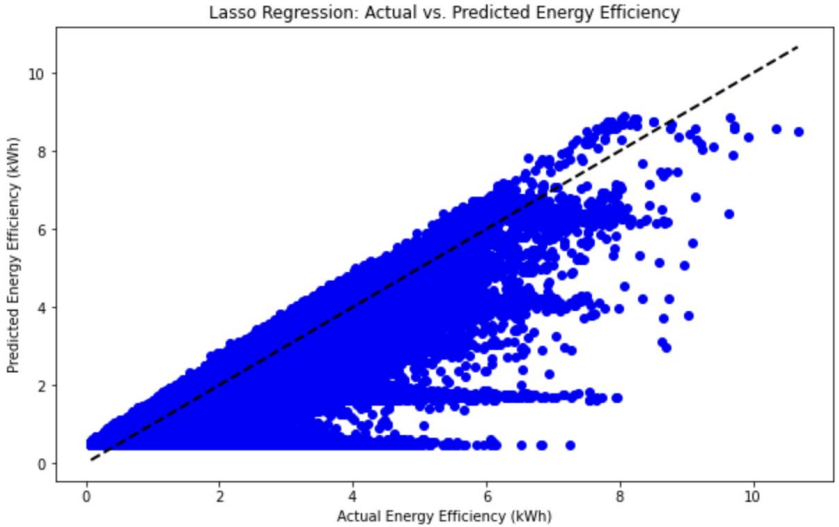
- **Classification:** hourly power consumption data from PJM Interconnection LLC in Eastern Interconnection grid system







Regression Models




```
Mean Squared Error:  0.31409400869800885
```

Equation: y = 0.06742526x_1 + 0.06387863x_2 + 0.07001731x_3 + 0.48

```
model.fit(X_train, y_train)
```

```
GradientBoostingRegressor
GradientBoostingRegressor(learning_rate=0.25)
```

```
y_pred = model.predict(X_test)
```

```
model.score(X_train, y_train)
```

```
0.9988853884768871
```

```
model.score(X_test, y_test)
```

```
0.9988716106858915
```

```
from sklearn.metrics import mean_squared_error
```

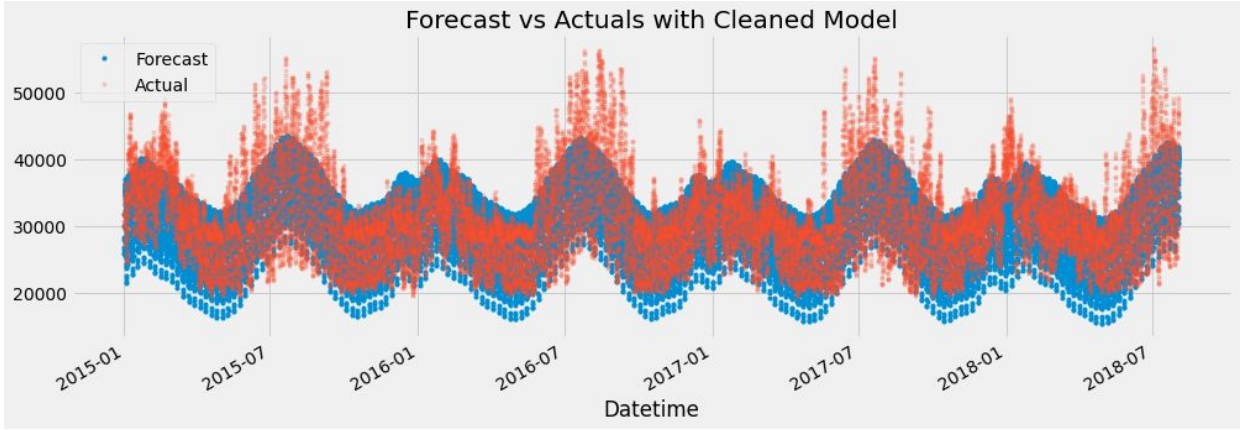
```
mean_squared_error(y_test, y_pred)
```

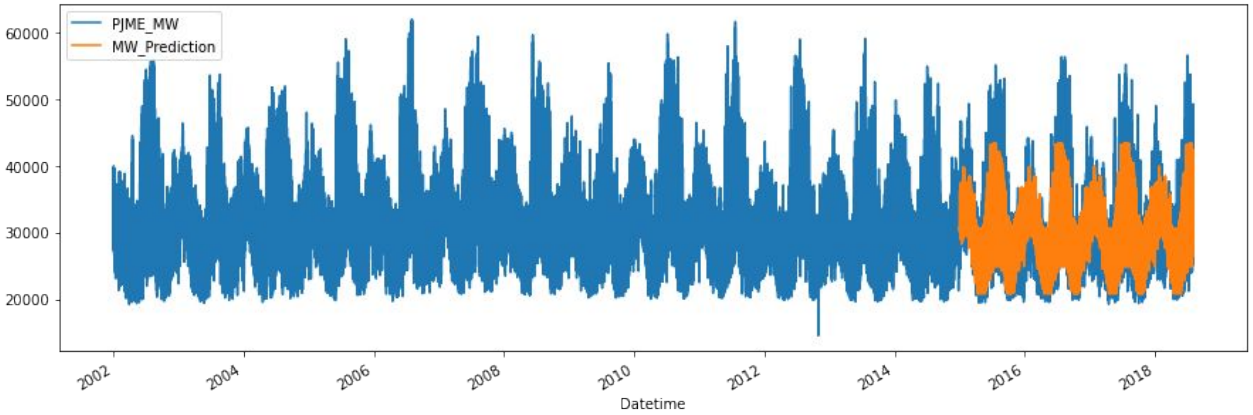
```
0.0012877535919137608
```

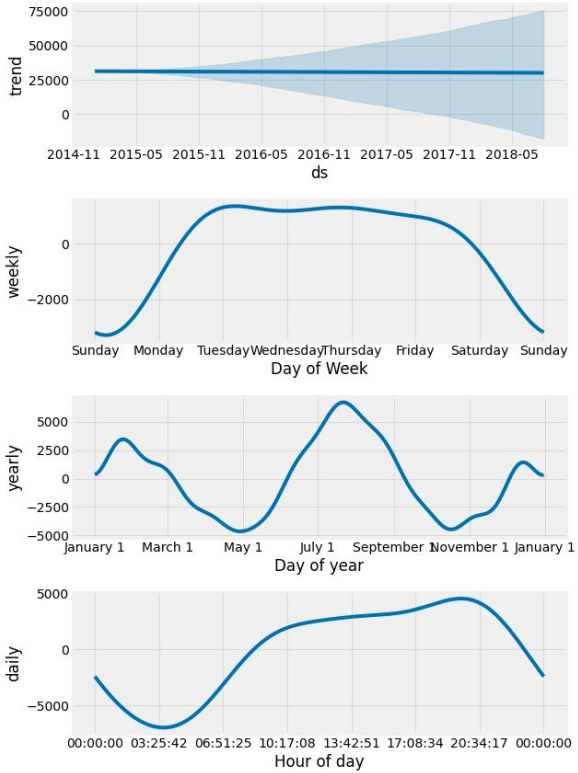
```
rmse = mean_squared_error(y_test, y_pred)**(0.5)
rmse
```

```
0.035885283779200645
```

Classification Models







Conclusion

- **Winter 2023**
  - Setup, Compile, Launch Instructions for EpiData Platform: 3 weeks
  - EDA and Modelling: 4 weeks

- **Applications**
  - Identify inefficiencies in energy management for households
  - Resource management