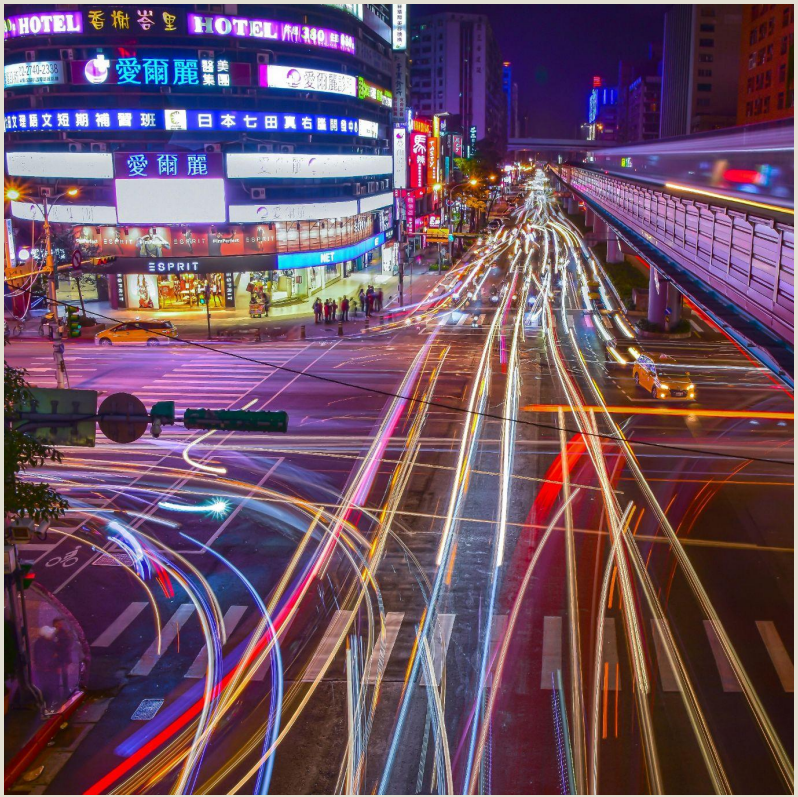
Traffic Prediction



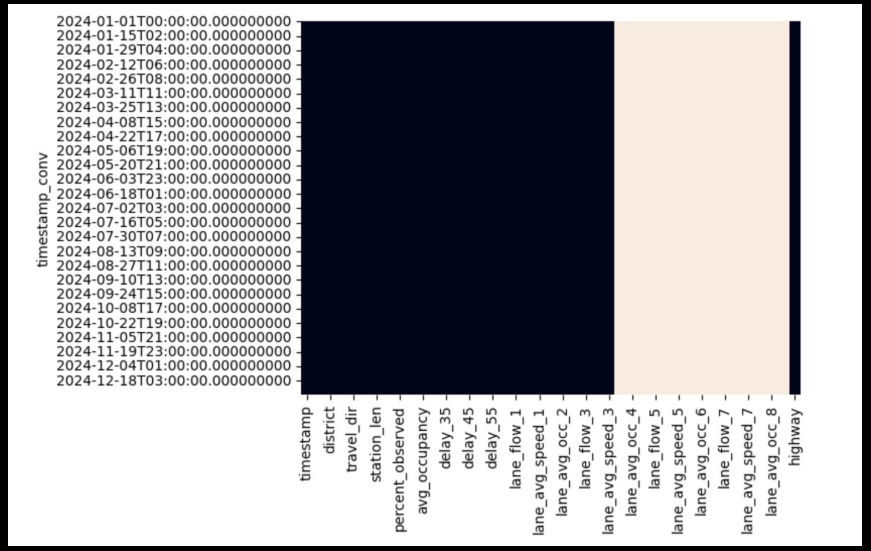
LUCY LENNEMANN

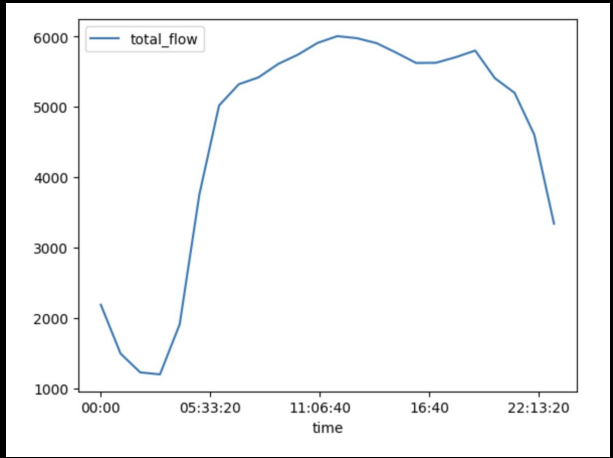
1 OVERVIEW

- **Goal**: Develop an application to predict traffic trends in Los Angeles based on historical Caltrans data
- **Architecture:** Streamlit frontend + Flask API → deployed using a Docker container and Google Cloud Run
- **Use:** User selects a station, frequency, and number of periods to predict → application will display hourly and weekly trends of average speed in that area

2 DATA

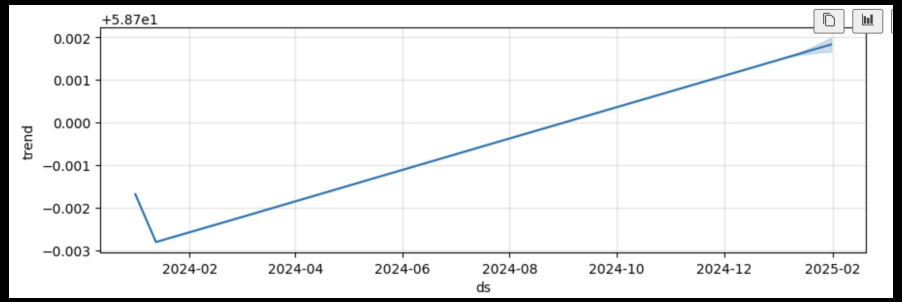
- **Collecting**: Used Selenium to scrape one year of traffic data for 4000+ stations placed near LA's major highways
  - Wrote script to combine monthly data into one CSV and organize files
- **Processing**: Filtered out stations with insufficient data, then reduced number of stations by a factor of 10 to reduce computation/memory requirements

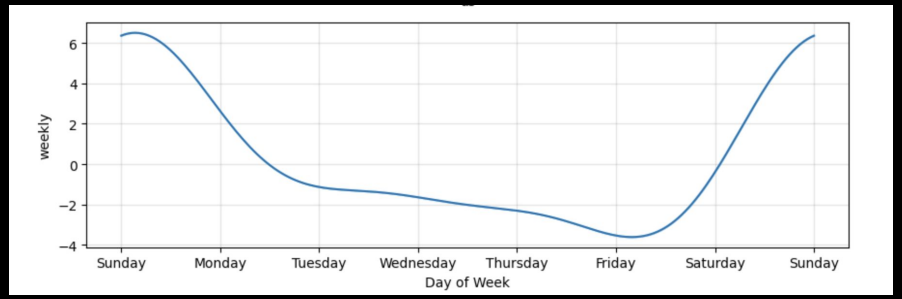


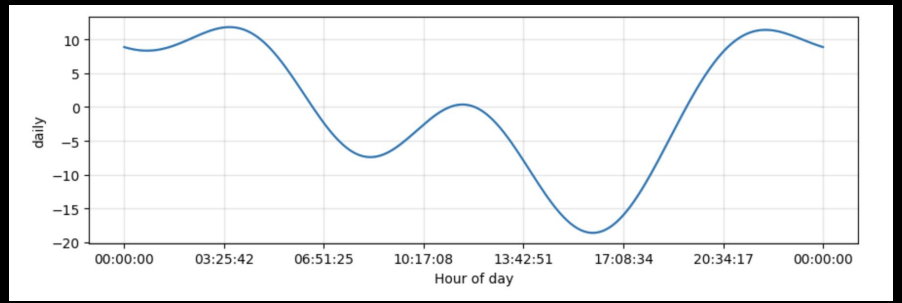


3 MODELING

- **Modeling:** Forecasted traffic trends with Facebook's Prophet procedure
- **Performance:** Weekly and hourly trends correspond to expectation about times of higher congestion – lower speeds during Monday through Friday, 8am and 5pm







4 TAKEAWAYS

- Lessons learned: cloud deployment, data pipelines, and backend/frontend integration
- Next steps: scale up my application with more data, experiment with more efficient data storage and file formats, incorporate routes to my application, DevOps practices