

Capstone Timeline

February 6th 2023 - February 26th 2023 (3 weeks):

- **Goals**

1. Develop the prediction model for demand and individual rides.
 - Preprocess the data by transforming it into a time series format with timestamps
 - Decompose the time series into its components: trend, seasonality, and residuals
 - Choose a time series forecasting method to model the trend and seasonality (Arima, Prophet, Orbit)
 - Train the time series model using the past data
 - Use the trained model to make predictions for future demand
 - Evaluate the performance of the model using metrics such as mean absolute error or mean squared error
 - Iteratively improve the model as needed.

2. Run probability simulations to assist prediction models

3. **Construct Validation Scenarios**

- **Assignments Due**

1. February 15th - Milestone 5 is Due

- **Meetings & Class**

1. Meeting February 6th, 9:00am
2. Class Meets February 8th
4. Meeting February 13th, 9:00am
5. **No Meeting February 20th - Mardi Gras (alternative day)**

February 27th - March 12th 2023 (2 weeks):

- **Goals**

1. **Add in validation steps & testing steps**
2. Develop the prediction model for driver revenue of each ride.
 - Fare prediction and demand prediction as input features in a regression model to predict driver revenue

- Collect data on fare prediction, demand prediction, and actual driver revenue to fit the regression model
- Use cross-validation techniques to evaluate performance of the regression model
- 3. Develop the prediction model for expected costs associated with each ride.
- **Meetings & Class**
- 1. **Class Meets February 27th - Find Alternative Day for Meeting**
- 2. Class Meets Mar. 1, 3
- 3. **Class Meets Mar. 6 - Find Alternative Day for Meeting**

March 13th - March 26th (2 weeks):

- **Goals**
- 1. Fine tune the expected costs model, add in any other variables including car information and up to date gas prices.
- 2. **Add in validation steps & testing steps**
- **Meetings & Class**
- 1. Meeting Mar. 13th, 9:00am
- 2. **Class Meets Mar. 20 - Find Alternative Day for Meeting**
- 3. Class Meets Mar. 22, 24

March 27th - April 9th (2 weeks):

- **Goals**
- 1. Integrate prediction models and bring all elements together to calculate expected revenue for drivers.
- 2. Final touches on the user end, make the website presentable.
- **Meetings & Classes**
- 1. **Class Meets Mar. 27 - Find Alternative Day for Meeting**
- 2. Class Meets Mar. 29
- 3. Meeting Apr. 3rd, 9:00am

April 10th - April 23rd (2 weeks):

- **Goals**

1. Test and fine-tune the recommendation tool.
2. Prepare final documentation and user manual.

- **Meetings & Classes**

1. Meeting Apr. 10th, 9:00am
2. Meeting Apr. 17th, 9:00am
3. Meeting Apr. 24th, 9:00am

April 25th (8:30a - 12pm) Expo:

1. Final deployment and release to users.