

Reducing Costs at The RIDE





Operates 365 days a year

From 5AM to 1AM

• In 58 cities and towns

HOW?

DATA



Best Garage Locations Reduce time between garage and pick-up

~1.8M Rows

44 Columns



Cancellation Predictions Probability of cancellation

for every trip



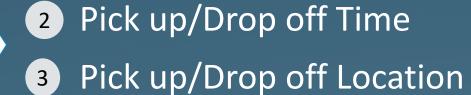
Data Generation

In order to create instant re-routing

1 Client ID TRIP

DATABASE

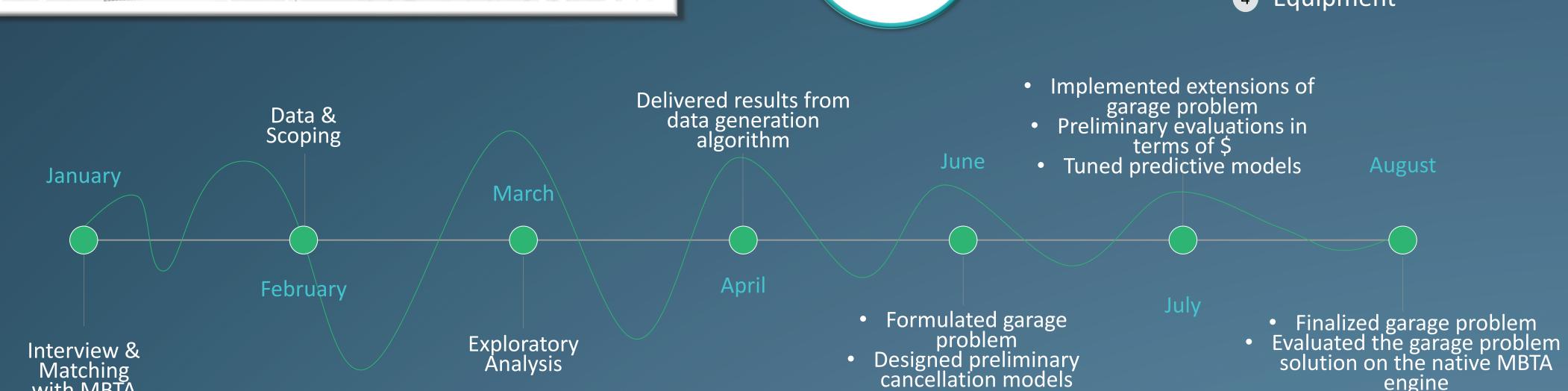
OF 2018



engine

Evaluated impact of cancellations model

Equipment



GARAGE LOCATION PROBLEM

Process Inputs from domain experts Bypass bias in demand due to existing garage locations 3

Create frequency > of first/last trips given time of the day

Matching with MBTA

Sum these weights for all trips at the zip code level

Incorporate weights to the objective function

Analysis

Run the optimization solver

Time of Day Weights 0.100 0.050 -

Objective

Minimize Operational Costs

Constraints

1. Satisfy every demand point

2. Given number of garages

3. 5 sizes of garages

4. Exclude downtown Boston zip codes

5. Certain locations are fixed

Decisions

1. Assign garages to a location

2. Assign demand to a garage

Formulation

Results

According to simulations using Julia Yan's routing software.





: Suggested Main : Suggested Satellite

Amal Rar

Mason Grimshaw

Diogo Lousa

CANCELLATIONS PREDICTION

Features







Models & Results

SELECTED MODEL

Model	Out of Sample AUC
Neural Network	0.79
Optimal Trees	0.70
XGBoost	0.63
CART	0.63
Random Forest	0.60

Results





NEXT STEPS

- Relocate garages according to the results of the optimization problem
- Operationalize the cancellation prediction model
- Explore different policies regarding trips with high cancellation risk







Julia Yan