

# Team Katorthotis

Theme: Deep Tech/Machine Learning  
Problem Statement: Route Optimization and  
Visualization for Sales Vehicles



# Presentation Highlights

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# Problem Statement

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## ROUTE OPTIMIZATION AND VISUALIZATION FOR SALES VEHICLES

- Optimization Mode: To maximize the total potential sales delivered with respect to the input parameters aiming at minimum cost.
- Recommendation Mode: To recommend the optimum option for each input parameter to cover maximum percentage of potential sales at best cost
- Visualization: Displaying the input parameters in image format for better clarity and visual description of the parameters.



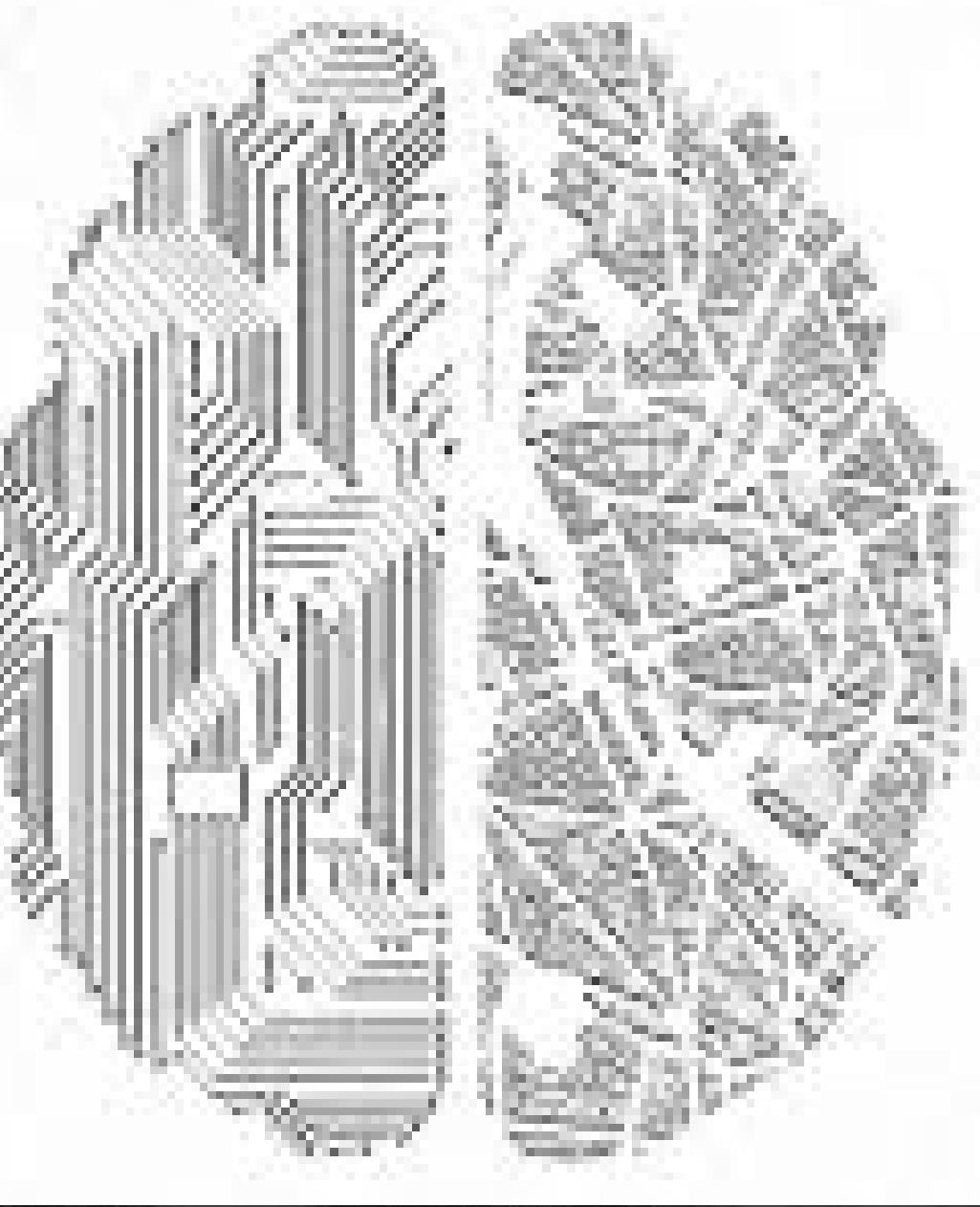
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# The Team



AAASTHA BHARATBHAI  
MERJA

ABIVISHAQ  
BALASUBRAMANIAN



# Project Description

Our approach to this problem statement include three parts:

1. Optimization: This is further divided into four stages distribution and delivery point mapping, vehicle and delivery point mapping, vehicle delivery sequence and vehicle path planning. For first two stages hard coding through python was adopted and for last two stages Reinforcement learning has been applied.
2. Recommendation: K-means clustering has been used for recommending the most appropriate parameters.
3. Visualization: A simple python code for visualizing the path the vehicle would follow is implemented. This code is helpful to understand the working of the RL agent. The RL training code logs all the actions of the agent. Each episode is stored as an individual text file. By specifying the text file in the visualization code that particular episodes actions would be shown.



# Expected Outcome



Considering three major sales transport application of food delivery, ride-hailing or goods transport our project aims to escalating the potential sales per day at budget.

Our project would result in providing an analysed path connecting the maximum number of delivery points with minimum distance distance traversed. Furthermore it would suggest the nearest and most appropriate vehicle based upon the input parameters along with recommendation of the nearest distribution point based on the application requirements.

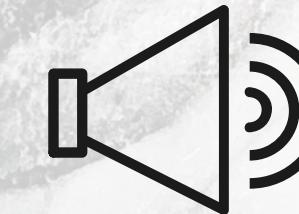
A visual perspective of the result in form a map is also provided for better analysis of the path traversed and traffic analysis with each of the distribution and delivery point clearly marked out. The vehicle details such as vehicle number, model, driver details and so on could also be specified based on user requirement.



# Features



Multi-domain applications with adaptable features for each.



Optimal parameter recommendations for increasing sales



Visualization through maps with distinguished markers.



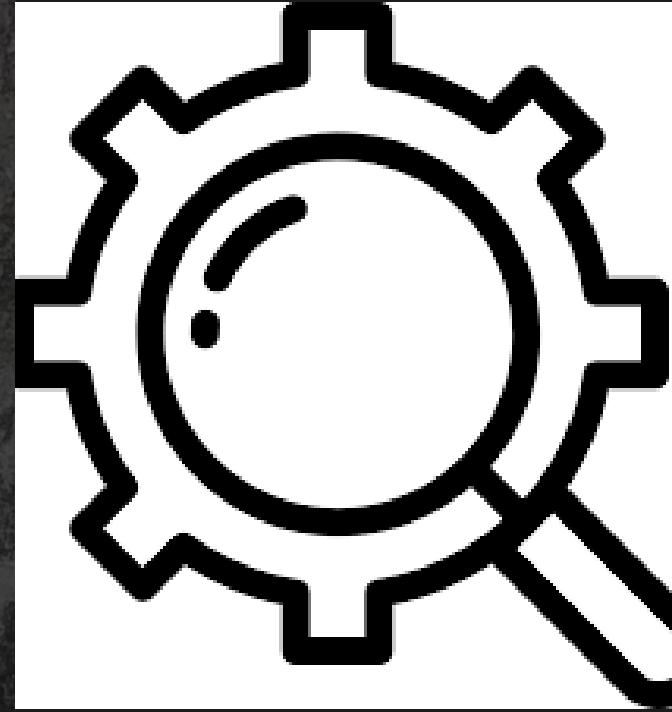
Uninterrupted tracking of vehicle and identifying potential sales.



# METHODOLOGIES

All the details have been uploaded on the Github link:

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## OPTIMIZATION

The several stages of optimization state have been explained in detail in the oprimization document.

## RECOMMENDATION

The K-means clustering used for this part is mentioned in the recommend document.

## VISUALIZATION

The concept used for this state has been mentioned in the visualization document.

# CONCLUSION

The Reinforcement Learning based product opens door for new perspectives in this field. The product can be modified based on the user requirements for either transporting goods, food delivery or ride-hailing. The vehicles used for each application are different and have a separate set of parameters. Many new aspects could be added to this product such as privacy of user and customer details. Overall this approach assists the users enhance their business profits by reducing the cost per transport.



# GitHub LINK

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<https://github.com/Aastha-M/Team-Katorthotis-Route-Optimization-and-Visualization-for-Sales-Vehicles-Deep-Tech-Machine-Learning.git>

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