ARTIFICIAL INTELLIGENCE PROJECT BY

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RL-BASED SYSTEM FOR ASSISTING CAB DRIVERS

Using Deep Learning Techniques

[Numpy, Python Packages, Matplotlib, Keras]

TABLE OF CONTENTS

PROJECT STATEMENT:

- The goal of our project is to build an RL-based algorithm/agent which can help cab drivers to maximize their profits by improving agent’s decision-making process.
- RL-based system for assisting cab drivers can potentially retain and attract new cab drivers.

ASSUMPTIONS:

- Cabs are electrical cars and they can run for 30 days.
- Cabs are operated at 5 locations across the city.
- All decisions were made at hourly intervals.
- Time taken by driver from one place to another is considered in integral hours.

APPROACH:

- In this project, an environment and an RL agent is created, that learns to choose the best request.
- Agent is trained using MDP, Deep Q-learning (DQN).
- Tools Used : Jupyter Notebook.
- Technologies : Python packages, NumPy ,Matplotlib and Keras for Deep Q Learning.

DELIVERABLES:

- Build an agent that learns to pick the best request using Neural Network model DQN.
- Calculate target Q value for each sample.
- Update the input state and output Q values.
- Then fit DQN model using the updated input and output values for optimization.
- Env.py is the Environment class, Each method (function) of the class has a specific purpose like generate random num of requests, calculate time duration for destination, next state and rewards for the ride.

EVALUATION:

- Model continuously update strategies to learn a strategy that maximizes long-term cumulative rewards.
- There are 2 performance metrics for our model.
  - Q- Value Convergence
  - Rewards per Episode

Thank You!!!