Economics Meets Machine Learning

Seasons of Code

Final Report

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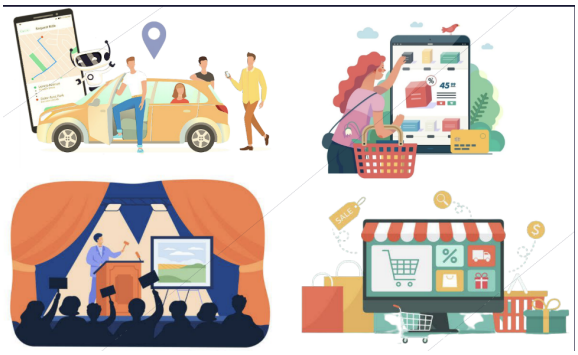
Under the mentorship of **Tejas Pagare**



1 Objective

This project involves implementing various Economics problems as a Markov Decision Process in a compact way as Gym. Later we implemented Bandit and Reinforcement Learning algorithms to solve these problems. Some economic problems that we dealt with include Matching Markets, Auctions, and allocation problems. Matching Markets has applications in ridesharing, online dating, job matching, kidney exchange, and university applications. Auctions are everywhere, from IPL team selection to online advertising, spectrum allocation to art auctions, government procurement, and online marketplaces.

2 An Overview of the Submission

All the work produced during this summer has been added to a github repository (https://github.com/sakshamrathi21/Seasons-of-Code---Economics-Meets-Machine-Learning). This folder includes a presentation video which will explain briefly all the codes and presentations produced as a part of this Project. It also includes some of the books and research papers we followed.

3 Timeline of the Project

Week Number	Tasks to be Completed
Week 1-2	Learn about different types of MDPs, Bandit Algorithms, and some RL algorithms
Week 3	Basic familiarity with Gym implementation and GitHub setup.
Week 4	Introduction to different Economics Problems and their mathematical models
Week 5	Implementating Econ problem as a Gym Environment
Week 6-7	Integrating Bandit or RL Algorithms
Week 8	Benchmarking against Heuristic Approaches