

A/B Testing

Scenario

You have four advertisement options (bandits), and your task is to design an experiment using Epsilon Greedy and Thompson Sampling.

Design of Experiment

A bandit class has already been created for you. It is an abstract class with abstract methods. You must not exclude anything from the Bandit() class. However, you can add **more stuff if you need**.

Bandit_Reward=[1,2,3,4]
NumberOfTrials: 20000

1. **Create a Bandit Class**
2. **Create EpsilonGreedy() and ThompsonSampling() classes and methods (inherited from Bandit()).**
 1. Epsilon-greedy:
 1. decay epsilon by $1/t$
 2. design the experiment
 2. Thompson Sampling
 1. design with known precision
 2. design the experiment
3. **Report:**
 1. Visualize the learning process for each algorithm (plot1())
 2. Visualize cumulative rewards from E-Greedy and Thompson Sampling.
 3. Store the rewards in a CSV file ({Bandit, Reward, Algorithm})
 4. Print cumulative reward
 5. Print cumulative regret

Note the values of *epsilon* and *precision* are up to you to decide.

Submission

1. The code must be well documented; I'd recommend using *pyment* package or *chatgpt*
2. requirements.txt
3. We will not continue checking after the error message (regardless of the error).
4. Late submissions will be treated according to the rules written in the syllabus.
5. **Push the codes to GitHub and submit only the link of a repo to Moodle**

BONUS

Suggest better implementation plan (10 points)