CSE546 | Final Project | A/B Testing using MAB Algorithms

Checkpoint I

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Abstract

A/B testing is a standard step in many e-commerce companies' marketing process. However, A/B testing is also used by internet companies of all types to get feedback about their systems from customers in various ways. In this project I explore how A/B testing can be incorporated into product development thereby easing the process of gathering feedback.

1. The Application

The project consists of a web application that identifies users and assigns them to one of the control groups. The user is shown the UI and asked questions such as how likely the user is to process through the given task. For example, the user might be shown a prototype of a shopping cart and asked how likely they are to complete the transaction given the UI associated to a particular control group. The input from the user is sent to the backend where the system calculates the confidence score for each variant in the control group.

2. The Backend

The backend for the application is a Flask-Python Micro Service. The backend only serves Restful APIs. Setup instruction for the backend is present in the readme file in the code repository.

The backend is responsible for identifying users uniquely and use their feedback to calculate the variant confidence scores. To calculate the confidence the backend will use Upper Confidence Bound (UCB-1) variant of Multi Armed Bandit algorithms.

3. The Frontend

The frontend for application is a React.js app bootstrapped using **create-react-app.** The frontend is capable of managing page routing and dynamic pages. The frontend uses cookies to identify users uniquely. The frontend checks for browser cookies to verify if a user is an existing participant. If not it requests the backend to assign the user to a particular control group and help them complete the demo process.

The frontend consists of 2 sections – one for demo viewers to participate in the test setup and a separate admin panel to visualize the performance of the A/B test.

4. References

a) https://towardsdatascience.com/comparing-multi-armed-bandit-algorithms-on-marketing-use-cases-8de62a851831
b) https://www.kaggle.com/code/yufengsui/datacamp-project-mobile-games-a-b-testing/notebook