Motiv Optimize
Software Engineering Department, University of Calgary (2023)

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Objective and Scope
To create a product aiming to improve the gaps of A/B testing, the team developed a simplified and user-friendly platform for marketing teams to easily upload and retrieve information about their campaigns. Through a web application, our users should be able to create campaigns, composed of multiple designs to be tested based on a pre-established conversion action such as a button click or page access. By setting up a conversion action, the Multi Armed Bandit (MAB) Algorithm can digest the information from the user’s journey inside the designs and combine them with their respective conversions’ history. As a result, the program should output a through, detailed and organized analysis of the designs under each campaign.

Methodology
The team began with a detailed analysis of the project requirements to ensure a complete understanding of the project scope. Following this, an extensive research phase was conducted to explore various solutions to the problem at hand. The culmination of information at this stage lead to a division of the project into more manageable components: URL redirection, MAB algorithm, back-end logic and front-end components. With the use of version control, agile development and software testing techniques the team worked in groups of 2 people to build the individual components up to a functional piece of software, before merging and testing its final version.

Throughout the second sprint, the individual components were ready to be tested. With the use of artificially created data, tests were conducted to experiment the effectiveness and reliability of the product components. With that in hand, the team rapidly noticed the potential of the MAB Algorithm to improve user conversion in comparison to A/B Testing. However, this algorithm can follow two different strategies: Epsilon Greedy and Thompson Sampling, which can consequently output different results. This led the team to further analyze both approaches and include them as options for the user to choose when creating campaigns.

The following graph portrays the comparison between MAB Algorithm and A/B testing:

A/B Testing | MAB Algorithm
---|---
Design A | High Conversion
Design B | Medium Conversion
Design C | Low Conversion

Conclusions
The team has been able to develop a product that will allow marketing teams to identify quickly their best performing designs while optimizing for real time visitors. Utilizing two different algorithms it allows marketing teams to try different ways to increase their conversion rates with the knowledge that poorly performing webpages will not affect their bottom line. Lastly, it provides a more detailed and effective set of insights which facilitate the understanding of why certain designs perform better than others with greater accuracy.

References