

Dashboard for Multi Armed Bandit (MAB) Algorithms

Surbhi Gupta, Kishan Patel

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Supervisor: Aditya Mahajan, Design Project 1

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- Website Optimization

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- Viewing File Data
- Viewing When a Particular Arm is Played
- Viewing Results by Time
- Running a Particular Simulation on Known Data

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- Enhance Interactivity

4 Methodology

- Organization and Challenges

Objective and Purpose

Objective

To represent the results of executing a generic class of MAB algorithms used for Website Optimization (WO)

Purpose

Ease of identification of best performing (most efficient) MAB algorithm for WO as well as

- In-depth visual understanding
- Engaging interactive design

Terminology

Some terms to familiarize with

- **Agent:** Decision maker
- **Arm:** Action
- **Gain:** Measure of success or reward

MAB Problem

Problem

An **agent** chooses 1 **arm**, and receives a **gain** from it.
How can the agent **maximize** his gain?

Algorithm

Look for the most optimal arm by

- Exploring new or existing arms
 - Existing arms to see if they perform even better
- Exploiting the high performing arms

Website Optimization

WO as a bandit problem

What do each of these represent?

- Agent: User
- Arm: Website version with unique
 - Color scheme
 - Layouts
 - Size of buttons
- Gain: Effectiveness of a particular website version

Charting Library Research

- Options explored: Radian, Cubism.js, NVD3.js, Rickshaw
- Narrowed choices to: Radian, Rickshaw

Radian

Parameter	Radian
Reliability	In development phase
Resource Availability	Well organized tutorial documentation External resources for Angular.js directives Untidy and non-intuitive Github repository
Learning Curve	Knowledge of HTML Custom HTML elements can represent functional and data plots Angular.js knowledge for interactive plots
Features and Extensibility	Limited basic features (covered by Rickshaw)

Rickshaw

Parameter	Rickshaw
Reliability	Established framework
Resource Availability	Limited and concise tutorial documentation Comprehensive '/examples' section in Github repository Untidy and non-intuitive Github repository
Learning Curve	Knowledge of JavaScript for functional, data and interactive plots
Features and Extensibility	Feature rich Vast range of extensions to build on and extend existing functionality *Time fixture feature (time series graphs)

Viewing File Data

TODO: Explain what this is about and put a screenshot

Viewing When a Particular Arm is Played

TODO: Explain what this is about and put a screenshot

Viewing Results by Time

TODO: Explain what this is about and put a screenshot

Running a Particular Simulation on Known Data

TODO: Explain what this is about and put a screenshot

Support for Live Data

TODO: Explain what this is about

Enhance Interactivity

TODO: Explain what this is about

Organization and Challenges

TODO: Organization: Talk about how the group organizes itself (meetings breakdown, how we communicate)

Challenges: Talk about the challenges faced eg. in picking charting library, learning curve