

Comparison Studies of Multi-Armed Bandit Algorithms for Display Advertising Optimization

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Abstract: The classical multi-armed bandit problem has gained increasing popularity and attention in both academia and industry. The core challenge consists of a good balance between exploration and exploitation, with the intention to maximize the accumulated rewards over the long run. Online display advertising is one of the important application areas of multi-armed bandit. Specifically, given a specific group of ads (referred to as an ad group), we want to allocate total N impressions (as N pulls) to the K different ads (as K arms) in the particular group, with the attempt to maximize expected accumulated rewards (e.g. clicks). The main contributions of this project include: 1) we setup the simulation studies to characterize the special features for online advertisement optimization, providing guidance to choose methods and the way to tune their corresponding parameters for practitioners who encounter similar problems; 2) we study different factors affecting performance; 3) we also conduct our comparison experiments with non-stationary scenarios, as it's more similar to real applications.