

## Dynamic Pricing using Multi-Armed Bandits

Closed to further applications

**Faculty Member:** [Vineet Kumar](#)

[Kosuke Uetake](#)

This project is eligible for remote work.

### Proposal Description:

Multi-armed bandits using reinforcement learning have commonly been used by a decision-maker to learn in uncertain environments, where the goal is to both learn and to exploit current information consistent with utility maximization. This common exploration-exploitation framework has applications in a number of areas, including robotics, clinical trial design, advertising and dynamic pricing. Our project seeks to characterize a variety of reinforcement learning approaches, and determine a better approach to personalized pricing using reinforcement learning. The project is likely to including simulation studies as well as empirical analysis using data from a well known platform that serves as a marketplace for buyers and artists.

The RA would be expected to contribute in a number of ways to the project, including but not limited to:

- (1) Identifying, reviewing and presenting state of the art literature in the area
- (2) Data analysis to document and identify patterns, doing regression analysis and similar tasks.
- (3) Implementing existing algorithms and adapting them to the current research design
- (4) generate regular reports on aspects requested by professors.

### Requisite Skills and Qualifications:

Data Analysis, Programming in R / Python, Data Visualization and Report Generation. Experience with Dynamic Programming is a plus but not required.

**Award:** Rajat Doshi

**Tobin Application Link:** [Tobin Application](#)

**Project Type:** Tobin RA

**Project Year:** 2021

**Term:** Spring 2021

**Source URL:** <https://economics.yale.edu/undergraduate/tobin-ra/spring-2021/dynamic-pricing-using-multi-armed-bandits>