

# Multi-Agent Systems: Final Homework Assignment

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## 1 Multi-Armed Bandits

### 1.1 Thompson Sampling for a single Bandit

#### 1.1.1 Beta-Density

In this section, we demonstrate the four properties of the beta distribution. The Beta distribution is a probability distribution which takes  $\alpha$  and  $\beta$  values and returns a value in the range  $0 \leq x \leq 1$ , dependent on the values of  $\alpha$  and  $\beta$ . The Beta distribution is defined as follows:

$$B(x; \alpha, \beta) = \frac{(\alpha + \beta - 1)!}{(\alpha - 1)! (\beta - 1)!} x^{\alpha - 1} (1 - x)^{\beta - 1} \quad (1)$$

1.

### 1.2 Thompson Sampling for a 2-armed Bandit

Yet more Memes

## 2 Reinforcement Learning: Cliff Walking

Yorgen Fenech didn't kill himself