

# Exploration and Fairness in Infinite Armed Bandit Problems

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## Abstract

## 1 Introduction

(Parikh, 2019) (Parikh, 2010) (Blum et al., 2020)

## 2 Related Work and Preliminary Concepts

### 2.1 Infinite Multi-Armed-Bandit

### 2.2 Regret Bound

### 2.3 UCB

### 2.4 Thompson Sampling

### 2.5 Fairness

## 3 Proposed Method

### 3.1 Curiosity

### 3.2 Surplus

## 4 Experiments and Discussion

### 4.1 The Agents

### 4.2 Environments

1. Uniform Environment
2. Increasingly Better Environment
3. Progressively Worse Environment

### 4.3 Results

### 4.4 Discussion

## 5 Conclusion

## References

- Avrim Blum, John Hopcroft, and Ravindran Kannan. 2020. *Foundations of Data Science*. Cambridge University Press, Cambridge.
- Prashant Parikh. 2010. *Language and Equilibrium*. MIT Press.
- Prashant Parikh. 2019. *Communication and content*. Number 4 in Topics at the Grammar-Discourse Interface. Language Science Press, Berlin.