



Module PMRF-ISSS090/III/2025

# Submodular Bandit Optimization

## Name of the PMRF student

**Prateek Chanda**

**PhD Fellow at IIT Bombay, CSE**

## Required background of the students taught

3rd/4th UG and PG students from any discipline with interest in math and machine learning can take this course.

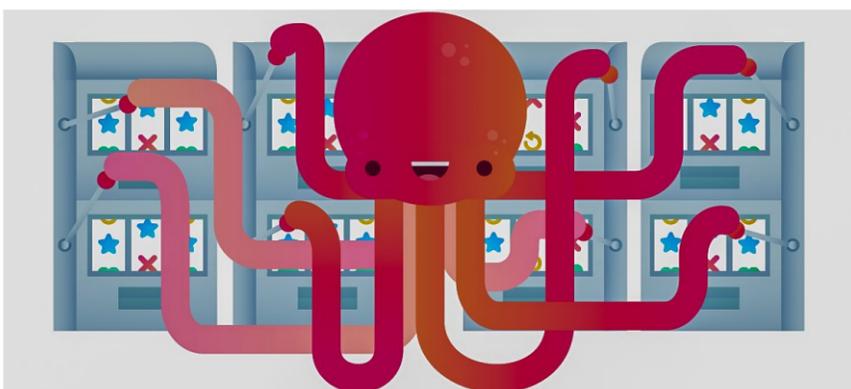


Image source: UMBC Departmental Talk

## Details of the content of the module

1. Introduction to Bandits
2. Bandit Convex Optimization
  - a. Multi-arm Bandit Optimization
  - b. Contextual Bandits
  - c. Online Gradient and Mirror Descent
  - d. Exponential Weighting Algorithms
3. Bandit Algorithms
  - a. Linear Contextual Bandits
  - b. Quadratic Bandits
  - c. Submodularity
  - d. Submodular Bandits
  - e. Bandits in the context of submodular subset selection

### References:

1. Bandit Convex Optimisation by Tor Lattimore
2. Contextual Bandits with Stage-wise Constraints by Peter Barlett
3. Regret Analysis of Stochastic and Nonstochastic Multi-armed Bandit Problems by Sebastian Bubeck

## Schedule of the module

Start date: 6/10/2025

End date: 5/11/2025

Lecture time: To be decided

Number of Lectures: 6-7, 2 hours each

Meeting link : Will be shared later

[Link](#)

Contact email ID: [issf.forum@gmail.com](mailto:issf.forum@gmail.com)

Registration link:

[Google Forms](#)

