



Module PMRF-ISSS044/2022

# Markov Decision Processes

## Name of the PMRF student

**Avik Kar**

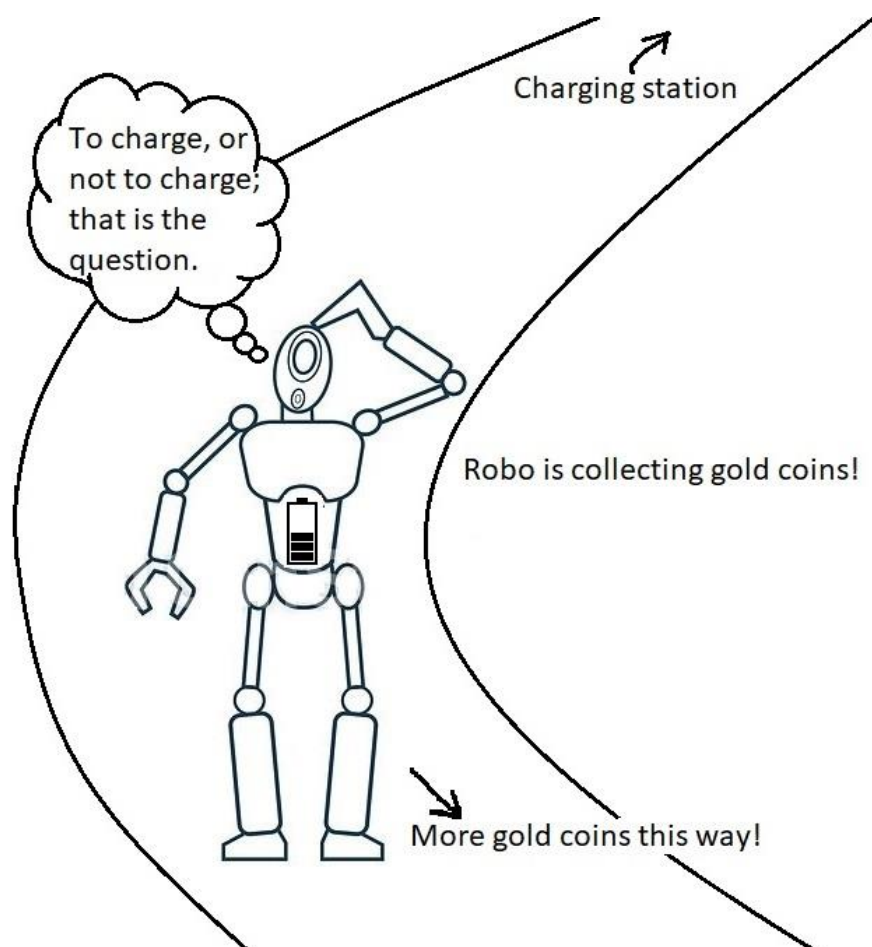
PhD fellow at dept. of ECE, IISc

## Required background of the students taught

3<sup>rd</sup>/4<sup>th</sup> UG and PG students from any engineering discipline with interest in stochastic control, reinforcement learning, operations research etc. can take this course.  
Prerequisite: A basic course on probability.

## Online session coordinator

Will be chosen from the list of registrants



## Details of the content of the module

### Course Outline

1. Discrete-time Markov Chain
  - i. Introduction to discrete-time Markov chain (DTMC)
  - ii. Transience and recurrence; communicating classes
  - iii. Invariant distribution and ergodicity
2. Finite horizon Markov decision processes (MDP)
3. Infinite horizon discounted MDPs
  - i. Value iteration
  - ii. Policy iteration
  - iii. Linear programming methods
4. Infinite horizon total cost MDPs
5. Infinite horizon average cost MDPs
  - i. Optimality conditions and classification
  - ii. Value iteration
  - iii. Policy iteration and linear programming

## Schedule of the module

Start date: 07/01/2023

End date: 22/04/2023

Lecture time: Saturday, 9:30 am to 11:00 am

Number of Lectures:16

Meeting link : Will be shared later

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

Registration link: Click [here](#) or, scan the QR code

