

Data Science

Techfest is the annual science and technology festival of IIT Bombay. Following is the basic outline of the workshop that will be happening at **Techfest, IIT Bombay, In-Person** workshop by Simpl.

Session 1: What is Reinforcement Learning

- o Use cases and motivation to learn it
- o How is it different from traditional ML
- o Getting accustomed to RL terminologies (State, Action, Reward, Agent, Environment, etc.)

Session 2: Markov Decision Processes (MDPs)

- o Introduction to MDPs
- o Policies and value functions
- o Learning optimal policies and value functions
- o Understanding Bellman's equation and how it can be used to find optimal policies
- o **Expected Return and Discounted return - What drives RL agent learn to take optimal action in a given environment**

Session 3: Q-learning

- o Introduction to Q-learning
- o Exploration vs. Exploitation tradeoff
- o Implementing a greedy epsilon strategy

Section 4: Code project - Implement Q-learning with pure Python to play a game.