National University of Computer & Emerging Sciences, Karachi
Computer Science Department
Spring 2023, Lab Manual – 03
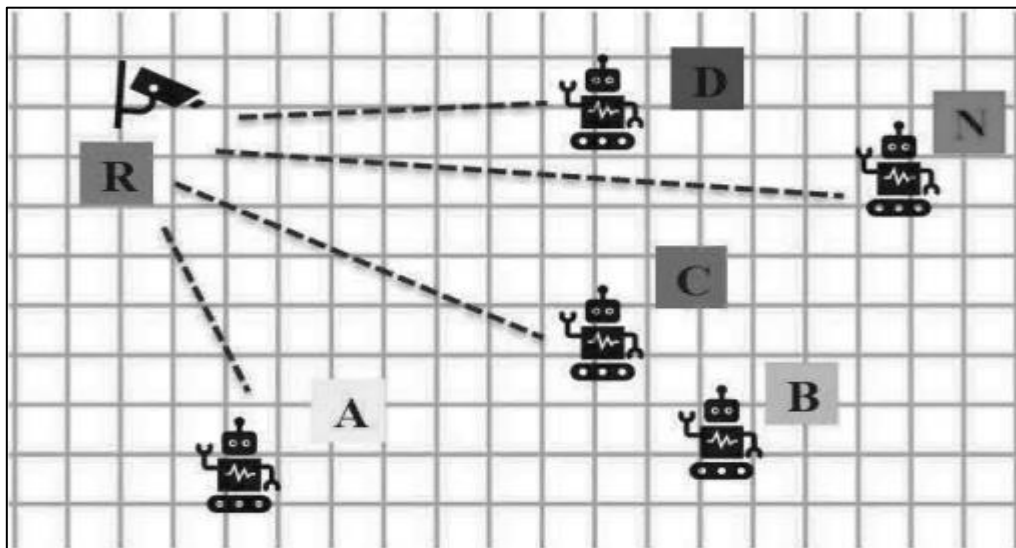
Course Code: AI-2002	Course: Artificial Intelligence Lab
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TASKS

Task#01: Simple Reflex Agents

Consider an interactive and cognitive environment (ICE) in which a smart camera is monitoring robot movement from one location to another. Let a robot be at location A for some time instant and then moves to point B and eventually reaches at point C and so on and so forth shown in the Fig. Develop a Python code to calculate a distance between reference point R (4, 0) of a camera and A, B, and C and N number of locations.

Task#02 Simple Reflex Agents

Consider a scenario, cameras placed on every side of the car — front, rear, left and right — to stitch together a 360-degree view of the environment. For a three-lane road a car is moving on a middle lane, consider the below scenario

- If the front camera detects the object within range of 8 meters breaks are applied automatically.
- If the left camera detects the object within range of 2 meters car moves to the right lane.
- If the right camera detects the object within range of 2 meters car moves to the left lane.
- For parking the car if the rear camera detects the object within 5 cm breaks are applied.

Task#03 Simple Reflex Agents

Consider the following scenario where the UAV receives temperature data from the installed sensors in a residential area. Assume that there are nine sensors installed that are measuring temperature in centigrade. Develop a Python code to calculate the average temperature in F.

Task#04 Learning Agent

Any agent, model, utility or goal-based agent can be transformed into learning agent. Few examples are snake game, Pac man, Self-driving cars, Ad recommendation system.

Read the below article and write few sentences that how you can transform Model based reflex task

https://vitalflux.com/reinforcement-learning-real-world-examples.