

Add on Lecture on Exploring Reinforcement Learning in the ear of Multi-Agent AI

The department of **Computer Science and Engineering (Data Science)** in collaboration with the **Department of Computer Science and Design** organised an **Add on Lecture** titled **Exploring Reinforcement Learning in the ear of Multi-Agent AI** on **(September 29th)** at **10.30 am** in **Seminar Hall 1**.

Objectives of the Event

- To introduce the concepts of Reinforcement Learning (RL) and its major types, focusing on value-based, policy-based, actor-critic, and model-based learning approaches.
- To highlight the emergence and importance of Multi-Agent Reinforcement Learning (MARL) in addressing real-world challenges.
- To discuss the workflow of RL development, including problem formulation, model selection, training, and deployment.
- To present application domains, success stories, and failure cases in RL and MARL.
- To encourage continuous learning and engagement with advanced topics like RL for Large Language Models (LLMs) and safety alignment.

Event Overview

The session opened at 10.30 AM with a welcome address followed by an engaging and interactive presentation by **Ms. Archana Rao V, Data Scientist at Elevance Health**. Her presentation highlighted the emergence and importance of Multi-Agent Reinforcement Learning. Participants learned what makes an AI agent "agentic," the distinct types of RL algorithms, and the growing relevance of multi-agent systems. The speaker mapped out the RL pipeline, from framing a problem to deploying solutions in industry settings. Attendees examined both technical challenges in MARL and practical cases—successes (such as in games, robotics, resource optimisation) and common failure points.

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Day	Time	Session Details
Monday, September 29, 2025	10.30 - 10.35 am	Welcome Address
	10.35 - 12.30 pm	Session on "RL and Multi-Agent Systems"

Table 1: Schedule of the Event



Figure 1: Students and faculty members attending the session

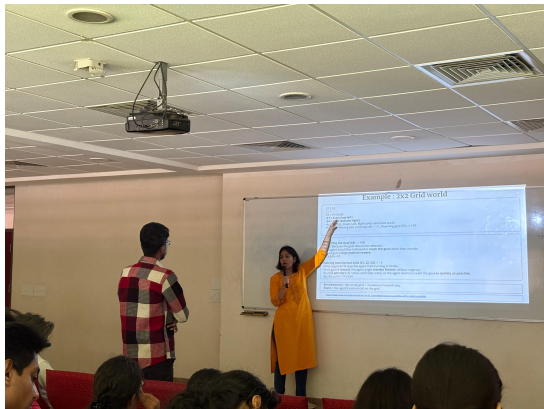


Figure 2: Chief Guest interacting with the participants

Outcomes and Impact

Students gained clarity on RL's foundational principles and why agentic features are critical for autonomous learning. Through examples, they saw how industry applies RL from simulation to production, and how challenges like non-stationarity or credit assignment are being addressed. The group was introduced to the role of RL in alignment and safety for LLMs—reinforcing how impactful RL can be for emerging AI technologies. Participants were motivated to pursue further learning and research in modern reinforcement learning and multi-agent systems.

Conclusions

The session provided a holistic understanding of RL—from core algorithms to multi-agent collaboration and LLM alignment. Real-world illustrations, failure analysis, and workflow breakdowns gave students practical perspectives. The interactive environment fostered curiosity, critical thinking, and a deeper interest in responsibly advancing AI. The lecture concluded by encouraging ongoing study and engagement with cutting-edge RL applications and methods.

Number of Students Attended: 113

Report by: Prof. Jija J. S.

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