Machine Intelligence Project Synopsis (UE20CS302)

Team members, section 5H :

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Title : Time-Optimized Federated Reinforcement Learning

Abstract :

In this project, we aim to develop a new architecture for federation in an IoT network to distribute the agents and their search spaces among the nodes such that the total training time is minimized for a reinforcement learning model. We propose doing this by modeling the network as a complete weighted directed graph and generating a minimum spanning tree from the graph by taking the ping between all pairs of devices as the weights for the edges. This concept has use cases in many different scenarios, especially in situations involving robot swarms for simultaneous localization and mapping.

The challenge here will lie in tuning this architecture to produce an aggregated Q-Table such that the RL model operates at a high level of accuracy.