

**Department of Computer Science and Engineering**

**Artificial Intelligence and Machine Learning**

*A mini project synopsis* *on*

**Title: Improved Multiplayer Game Performance in Virtual Environments Using Reinforcement Learning**

*by*

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**Problem Statement:**

The project addresses the problem of insufficiently dynamic AI opponents in virtual reality multiplayer games, which limits interesting gameplay and skill progression. It also intends to unlock the latent potential of AI-powered training simulations across sectors.

The development of a reinforcement learning-based solution lies at the heart of the project. This entails creating an AI agent capable of dynamically adapting gaming techniques in multiplayer games, hence creating engaging challenges for human players. Furthermore, the approach intends to extend this flexibility to real-life training circumstances.

The application area includes sectors such as vehicle operation and machinery utilization, where the AI agent may imitate realistic scenarios for training reasons. The AI agent's dynamic reactions enable safe skill growth in complicated situations, such as automobile driving.

**Synopsis:**

This synopsis discusses a practical use of machine learning, especially reinforcement learning, in the context of online games in virtual settings. The project aims to create a reinforcement learning model that learns and adapts gaming methods in a multiplayer game scenario, ultimately improving the performance of AI-controlled players.

Introduction:

This research investigates the relationship between machine learning and virtual reality, concentrating on using reinforcement learning techniques to construct an AI agent capable of improving its gameplay in multiplayer gaming settings. The research investigates how AI agents independently learn and optimize their gameplay methods, contributing to improved user experiences and, perhaps, more extensive applications.