Project Plan

Robbery Simulation using AI techniques

(Custom Project – Task 19)

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# Project Description

In this Project we aim to build a simulated Heist or a Robbery Scenario in a 2D graph-based environment where an Autonomous character “Agent (Thief)” will have to navigate through a set of terrains to steal an item and **escape** while avoiding the security agent guarding the item.

The Thief agent will be actively learning optimal strategies to avoid the Guarding agent. The Guarding agent will be a FSM which performs dynamic behaviors like **patrolling**, **chasing** and **investigating**. Movement throughout the terrain map will be guided through **seek**, **wander** and **flee** to ensure random and realistic interactions.

# Learning Outcome Approach Strategy

## ULO1 - Discuss and implement software development techniques to support the creation of AI behavior in games, focusing on non-obvious problem-solving approaches.

* In this project we aim to integrate both FSM and Learn based AI to address on the navigation and path planning showcasing hybrid approach on this project

## ULO2 - Understand and utilize a variety of graph and path-planning techniques.

* We will be implementing a custom navigation graph that is built to represent the Path layout, where both the agents will be traversing.

## ULO3 - Design and create realistic movements for agents using steering force models to simulate natural and responsive behavior.

* For utilization of the behavioral pattern of the agent we will be using Seek, Flee and Wander which will guide the agent movement which create a more dynamic simulation

## ULO4 - Design and develop agents capable of planning actions that require adaptive problem-solving techniques and innovative solutions.

* We plan on using reinforcement learning to adapt decision to be based on the environment which will have outcomes based on the past interaction to finding the best times for decision.

## ULO5 - Combine multiple AI techniques to develop sophisticated game AI capable of solving intricate, multi-layered problems that arise in dynamic game environments.

* As we plan on implementing FSMs, Steering and graph-based movement , we will be integrating all these techniques into the same environment as the final output.

**GitHub :** [**https://github.com/ChathilJay/Custom-Project---Heist-Simulation**](https://github.com/ChathilJay/Custom-Project---Heist-Simulation)