National University of Computer & Emerging Sciences
Karachi Campus

Snake game playing Agent

Project Proposal
Artificial Intelligence [AI]
Section: M

Group Members:

22K-6009 M.Sami Faisal
22K-6012 Syed Muhammad Sufyan
22K-5090 Muhammad Yasir

Project Proposal

Introduction

In this project, we aim to develop an intelligent agent capable of playing the classic Snake game autonomously. The agent will learn to navigate the game environment, collect food, and avoid obstacles using reinforcement learning techniques.

Problem Statement

While existing systems demonstrate the capability of training agents for gaming tasks, there's a lack of focus on simpler games like Snake. We intend to address this gap by developing an AI agent specifically tailored for playing the Snake game.

Proposed Solution

Our proposed solution involves training an intelligent agent using reinforcement learning algorithms. By implementing state-of-the-art techniques and leveraging the PyTorch framework, we aim to create an agent capable of achieving high scores and demonstrating advanced gameplay strategies in the Snake game.

Salient Features

Autonomous gameplay: The agent will navigate the game environment without human intervention.

Learning capability: The agent will continuously learn and improve its gameplay through reinforcement learning.

Adaptability: The agent will adapt its strategies based on the changing game dynamics and player performance.

Tools & Technologies

Programming Language: Python

Framework: PyTorch

Operating System: Platform-independent (will test on Linux and Windows)

Results

We will evaluate the performance of our agent by measuring its average score, gameplay efficiency, and ability to avoid collisions with obstacles. We aim to achieve scores comparable to or surpassing those achieved by human players.

Conclusion

Through this project, we aim to demonstrate the effectiveness of reinforcement learning techniques in training intelligent agents for playing classic arcade games like Snake. While challenges may arise during implementation, we are committed to refining our approach and achieving promising results.