Ai Project

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RL Rubik’s Cube Solver

Description:

This project solves a 3x3 Rubik’s Cube using reinforcement learning combined with search algorithms like A*. Instead of relying on predefined solving algorithms, it trains a neural network to predict how close a cube state is to being solved. This prediction guides the search to find efficient solutions. The project includes a GUI for visualizing the cube and supports running with pretrained models.

Implemented:

A Search:*

A* is a search algorithm that finds the shortest solution by combining the actual cost to reach a state and an estimated cost to the goal. A* uses this prediction to efficiently explore cube states and find an optimal sequence of moves to solve the puzzle.

GUI Implementation:

The project includes a graphical user interface built with PyQt5, allowing users to visualize the Rubik’s Cube and its solving process. The GUI shows real-time cube move sequences, helping users interact with and understand the AI’s solving behavior without using the command line.

Not Implemented:

In this project, the estimated cost is predicted by a neural network trained by reinforcement learning.