

2048

AI_VERSION



GROUP MEMBER

Menna Elsayed Ramdn

sec 6

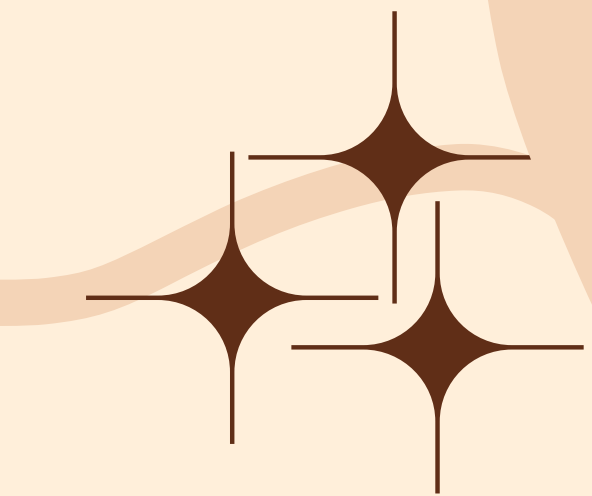
Menna Farg Hassan

sec 6



DESCRIPTION

THE AI AGENT PLAYS AUTOMATICALLY
USING THE EXPECTIMAX ALGORITHM
COMBINED WITH MULTIPLE
HEURISTICS TO MAXIMIZE ITS SCORE
AND REACH THE 2048 TILE.



AI STRATEGY

ALGORITHM:

EXPECTIMAX

HEURISTICS:

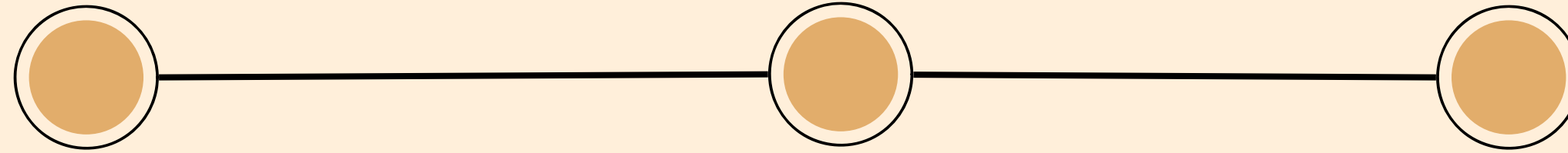
NUMBER OF EMPTY TILES

MAXIMUM TILE VALUE

BOARD SMOOTHNESS

BOARD MONOTONICITY

PEAS DESCRIPTION

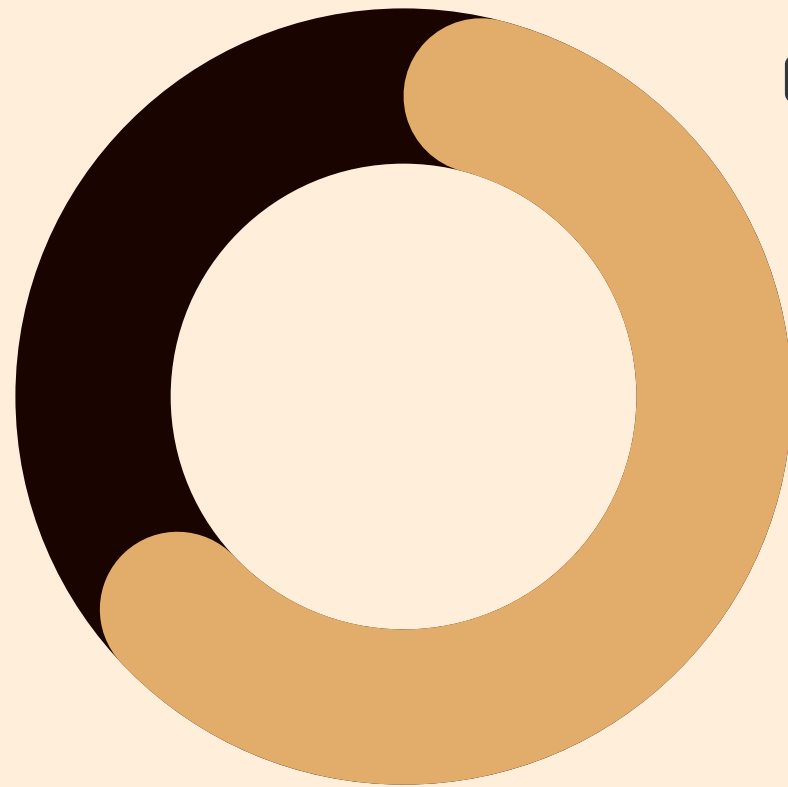


- **Performance Measure:** Achieving the highest possible score, reaching 2048 tile.

- **Environment:** 4x4 grid of numbered tiles.

- **Actuators:** Move tiles (up, down, left, right).

- **Sensors:** Read the current state of the board.



ODESA

- **Objective:** Win the game by reaching 2048.
- **Data:** Current board configuration.
- **Environment:** Static and fully observable.
- **Sensors:** Grid scanning.
- **Actuators:** Movement commands.




PROBLEM FORMULATION

- **State:** Current arrangement of numbers in the 4x4 grid.
- **Actions:** Move Up, Down, Left, or Right.
- **Goal State:** Achieve a tile with the value 2048.
- **Path Cost:** Maximize the score by making strategic moves.

RESULT

Winning Condition:

You win the game when any tile reaches 2048.
A "You Win!" message will appear on the screen. 

Losing Condition:

If the grid becomes full and no more moves are possible, the game ends with a "Game Over!" message.

THANK
YOU

