NATIONAL INSTITUTIONAL RANKING FRAMEWORK
NIRF-2023
Engineering Rank Band (151-200)
Pharmacy Rank - 88
Innovation Rank Band (51-100)

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DEPARTMENT OF COMPUTER APPLICATION

AI - MSE1 PROJECT - PUZZLE SOLVER

EVEN SEMESTER (AI101B)

MCA 2nd SEM (C)

Team Members :-

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2. Priyanshi [20241011C100153]

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UNDER THE SUPERVISION OF :-

Ms . Komal Salgotra

Interactive Sliding Puzzle Game

The "Puzzle Solver" is a Python-based game application that challenges , players with a classic sliding puzzle. Built using the Pygame library, this game divides an image into a 4x4 grid oftiles and shuffles them, requiring the player to rearrange the pieces to restore the original image.The game integrates interactive mechanics, such as move counting and a time-based challenge, making it engaging for users.

Project Objectives

Interactive Game

Develop an interactive sliding puzzle game using Python & Pygame.

Enhance Reasoning

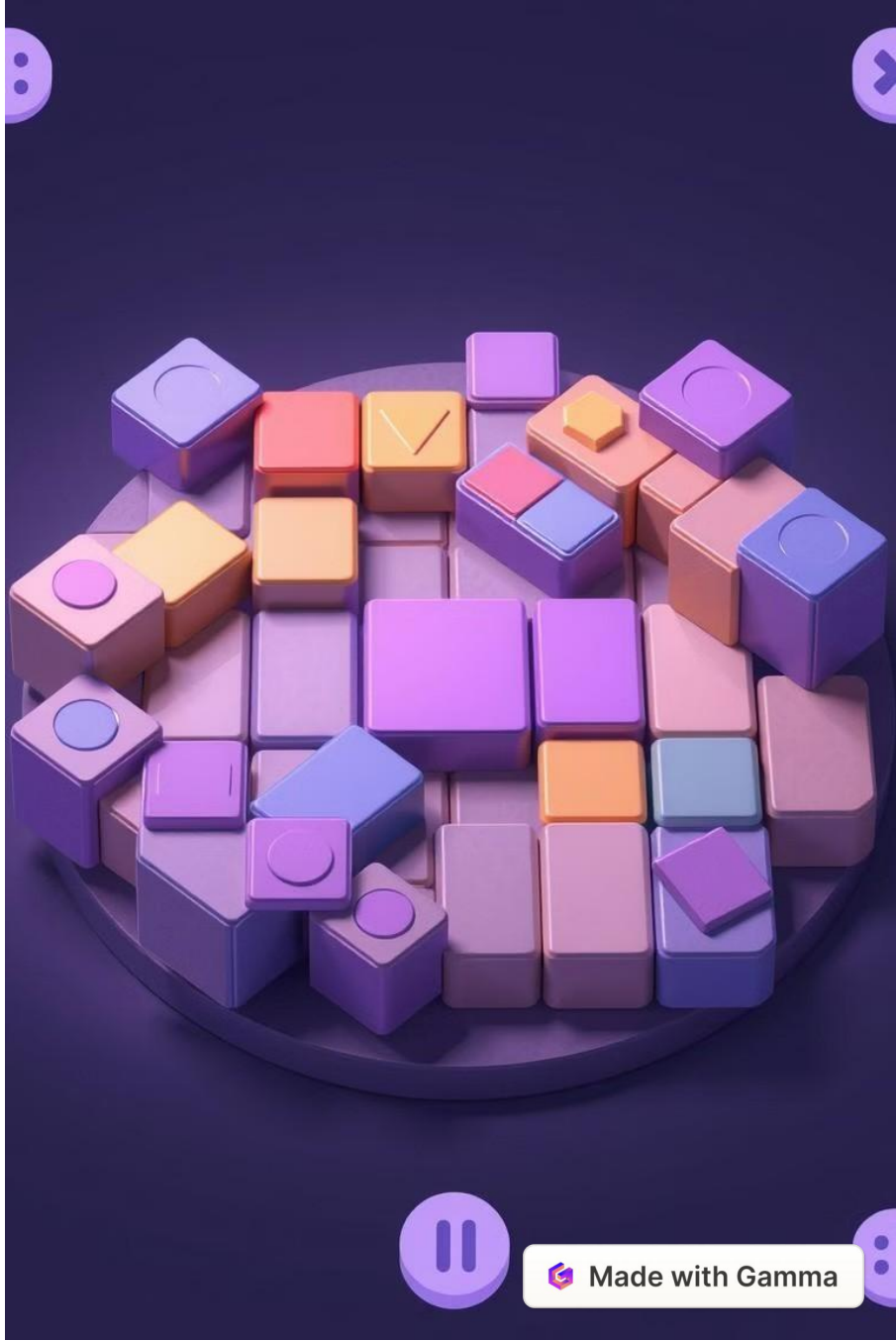
Enhance problem-solving & logical reasoning through gameplay.

Intuitive GUI

Implement an intuitive GUI for smooth user interaction.

Moves & Timer

Track moves & add a **timer to increase engagement.**



Development Methodology

Game Planning & Design

Sketching the UI and defining game rules.

Coding & Implementation

Writing Python scripts for game logic.

Event Handling

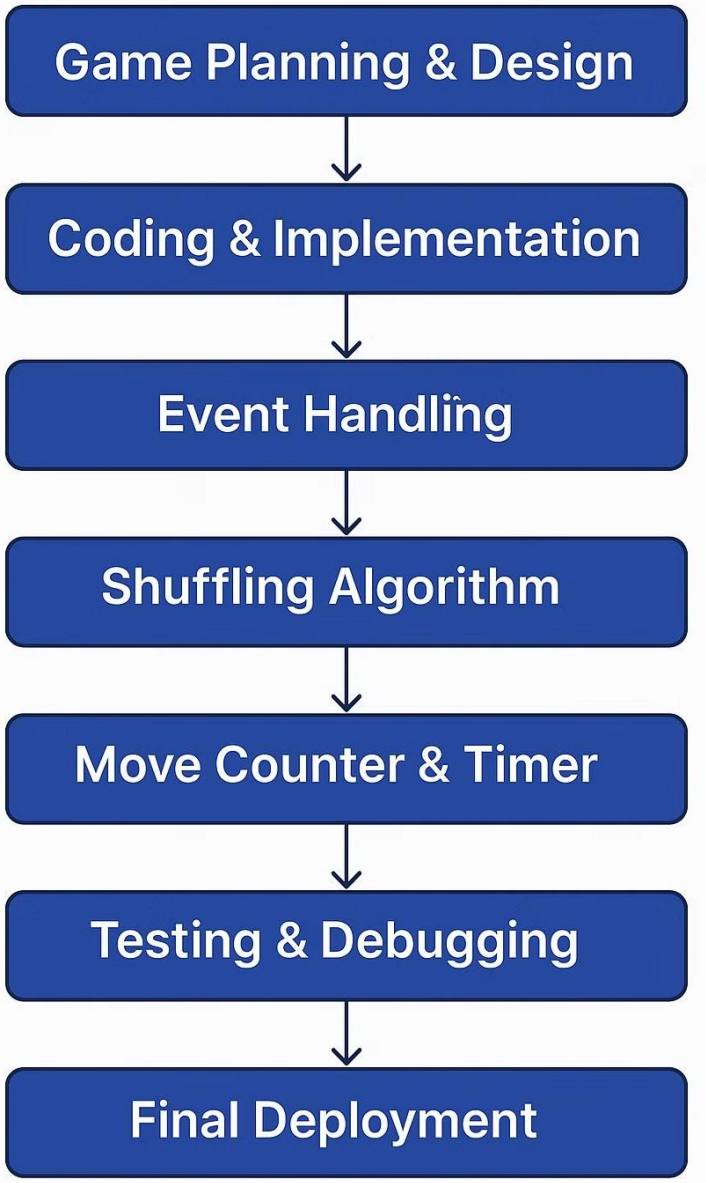
Capturing keyboard/mouse inputs for tile movement.

Shuffling Algorithm

Ensuring a **solvable puzzle** by properly arranging tiles.

Move Counter & Timer 3

Tracking player9s progress.



Technologies Used

Python

Core programming language.

Pygame

Graphics, rendering, and event handling.

Random Library

Shuffling tiles dynamically.

Puzzle Solver Features

Graphical UI

Smooth Animations

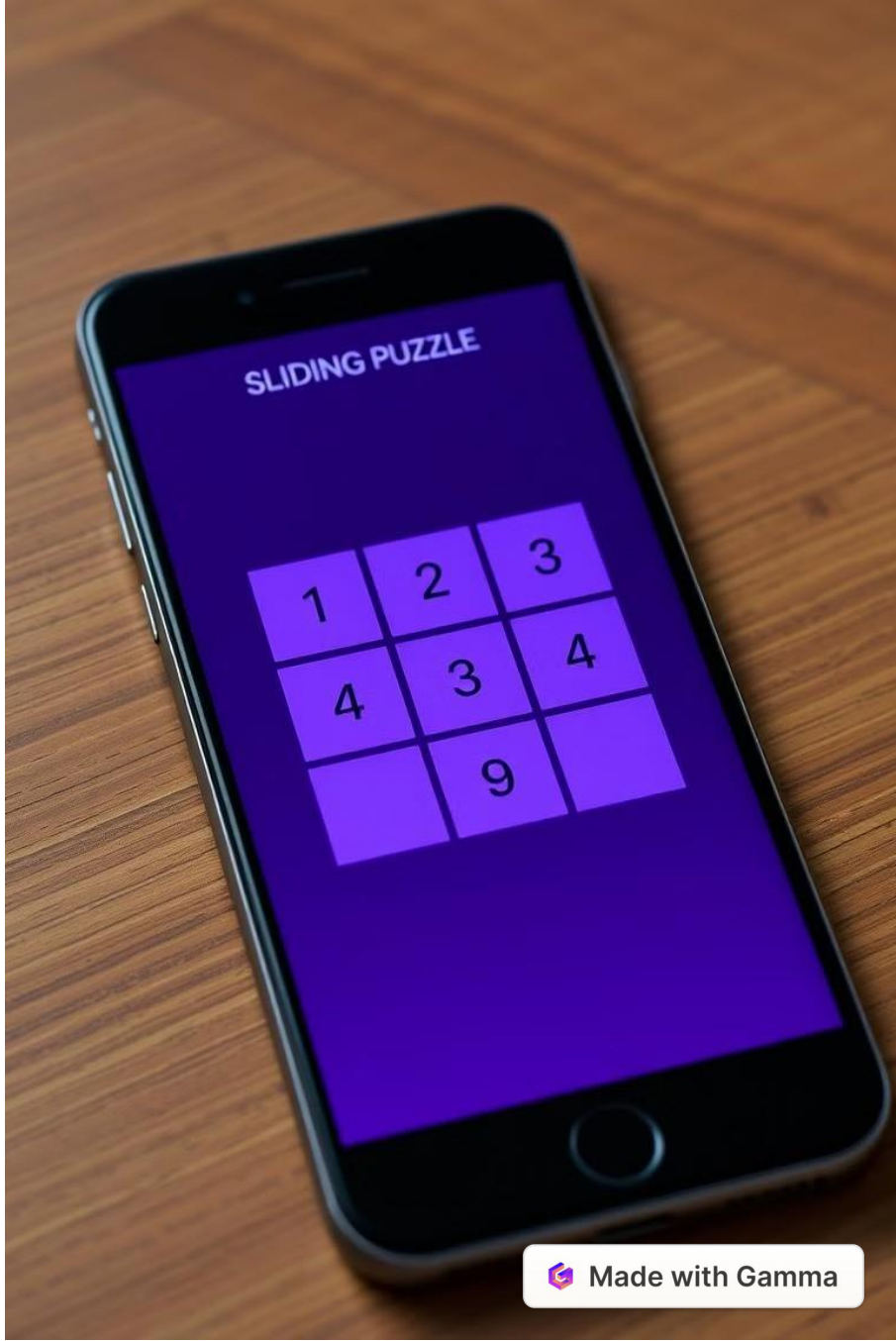
Input

Keyboard & Mouse Input

Move Counter

Challenge with Timer

Automatic Shuffling Algorithm for randomized start



Code Structure Overview

main.py

Handles the game loop & user interactions

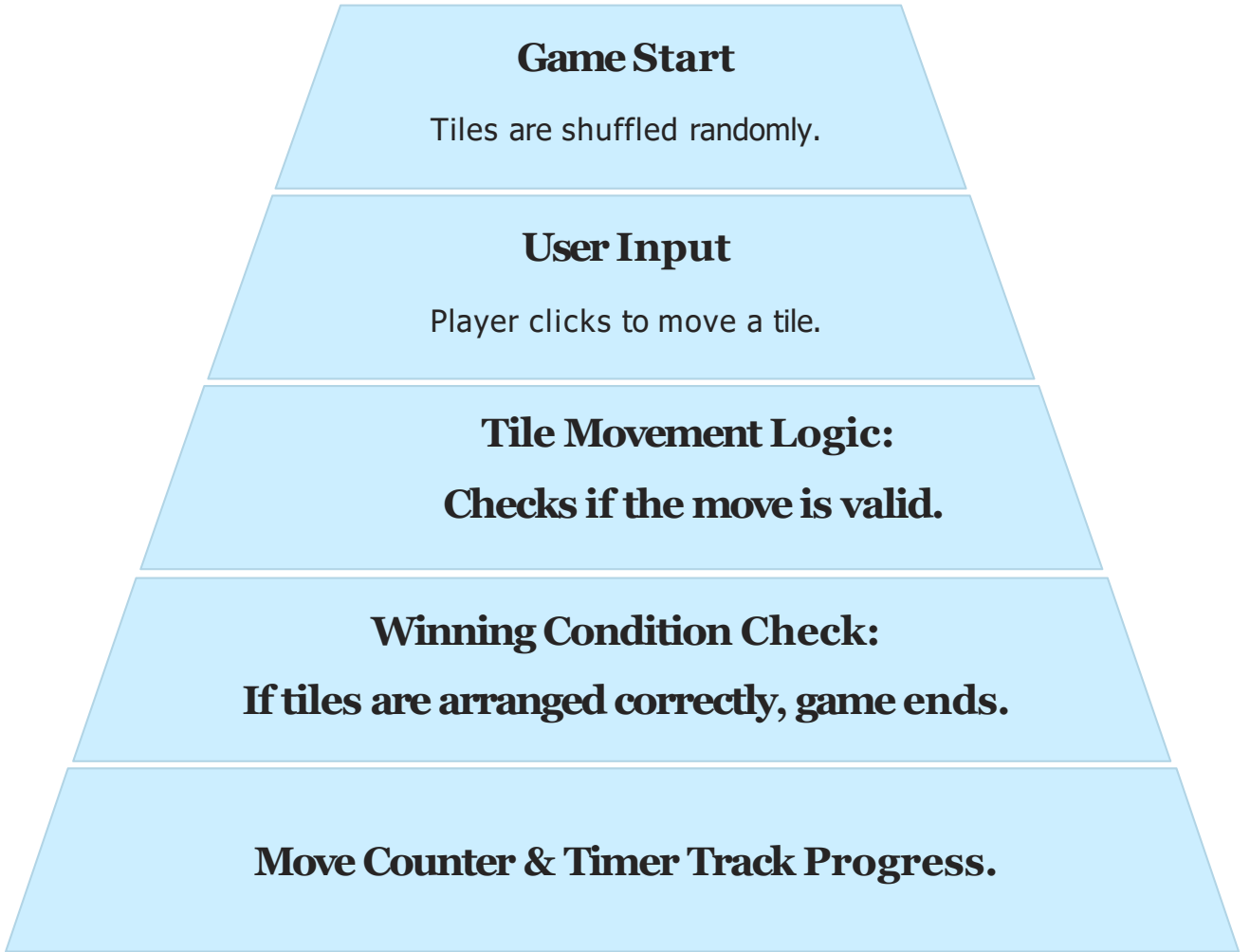
puzzle_logic.py

Manages tile movement, validation & shuffling

ui_unknown link

Handles GUI rendering & animations

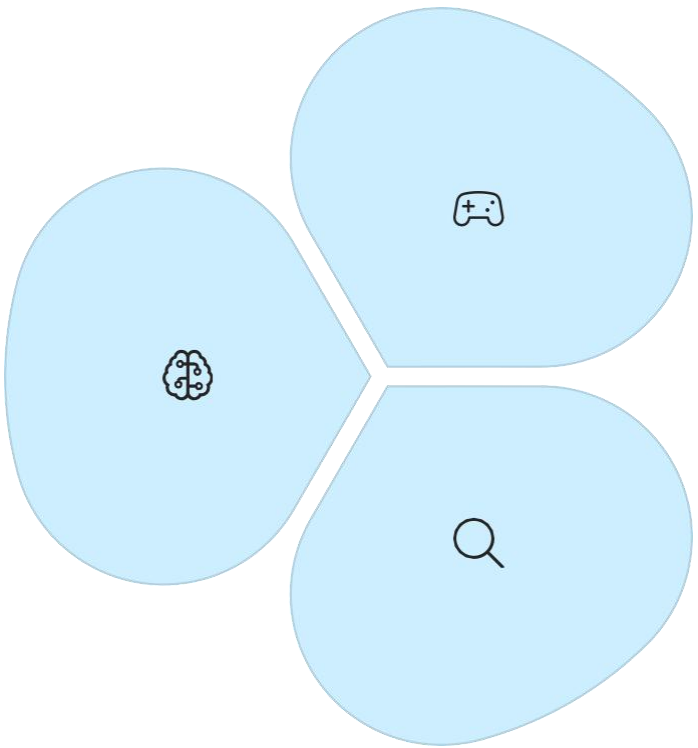
How the Puzzle Solver Works



Real-World Applications

Logical Thinking

Used in IQ tests & brain exercises.



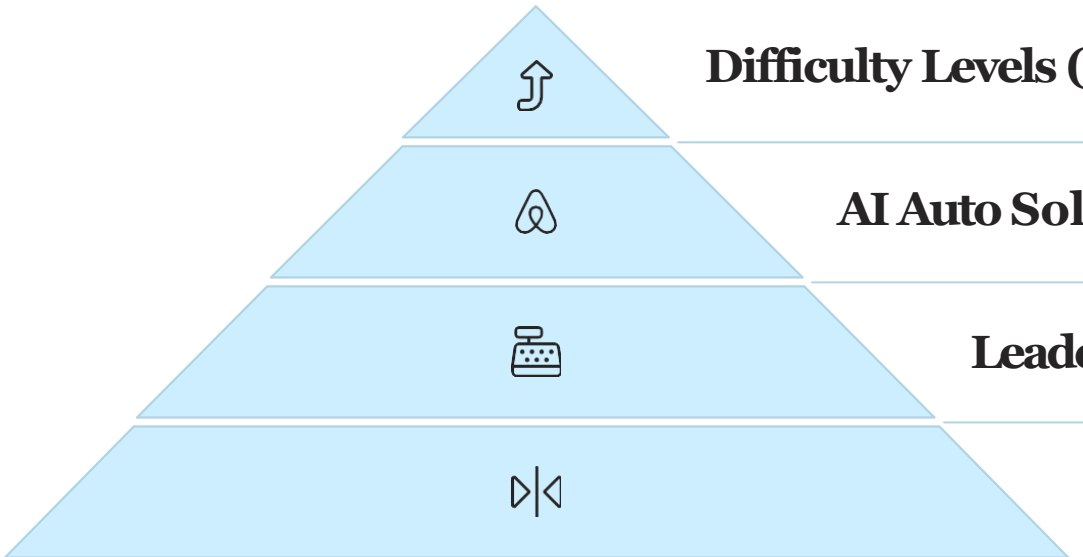
Game Development

Teaches event-driven programming.

Algorithm Optimization

Useful in AI & pathfinding.

Future Enhancements



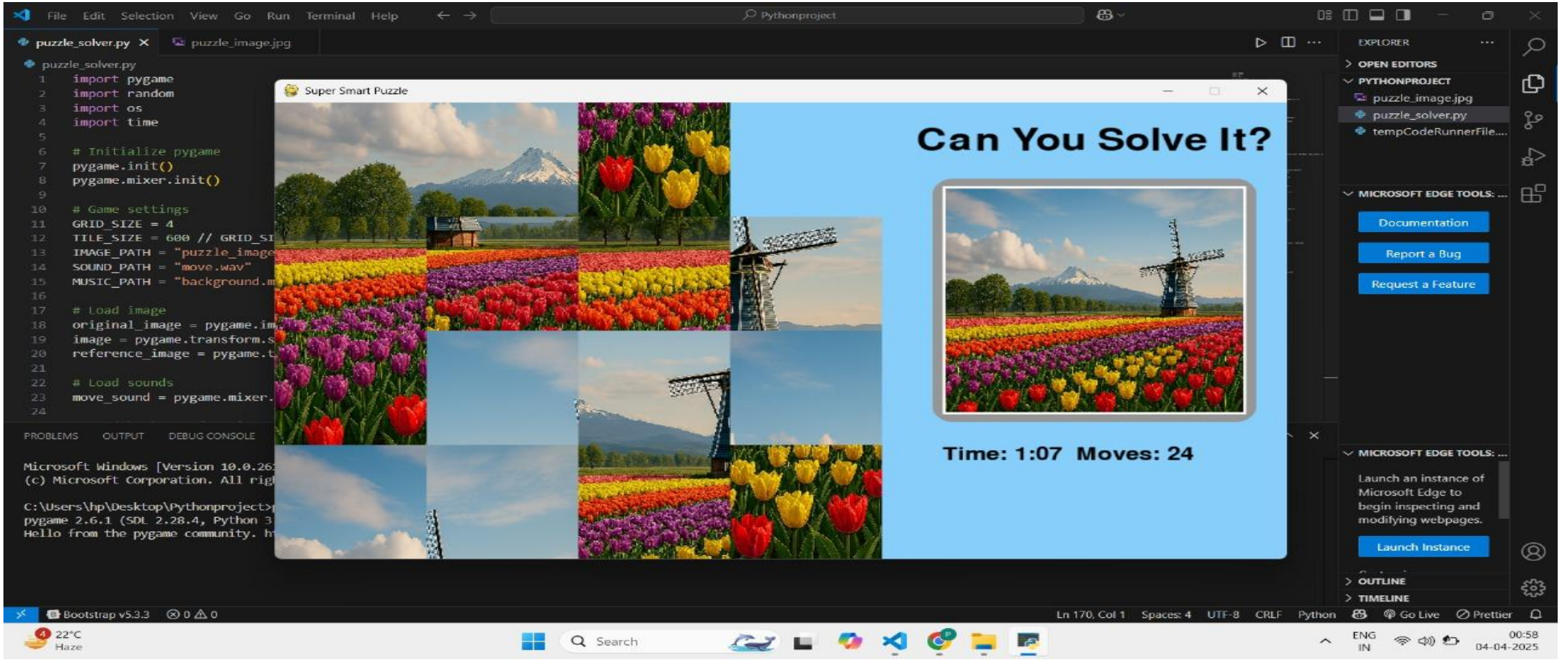
Difficulty Levels (3×3 , 5×5) Grids

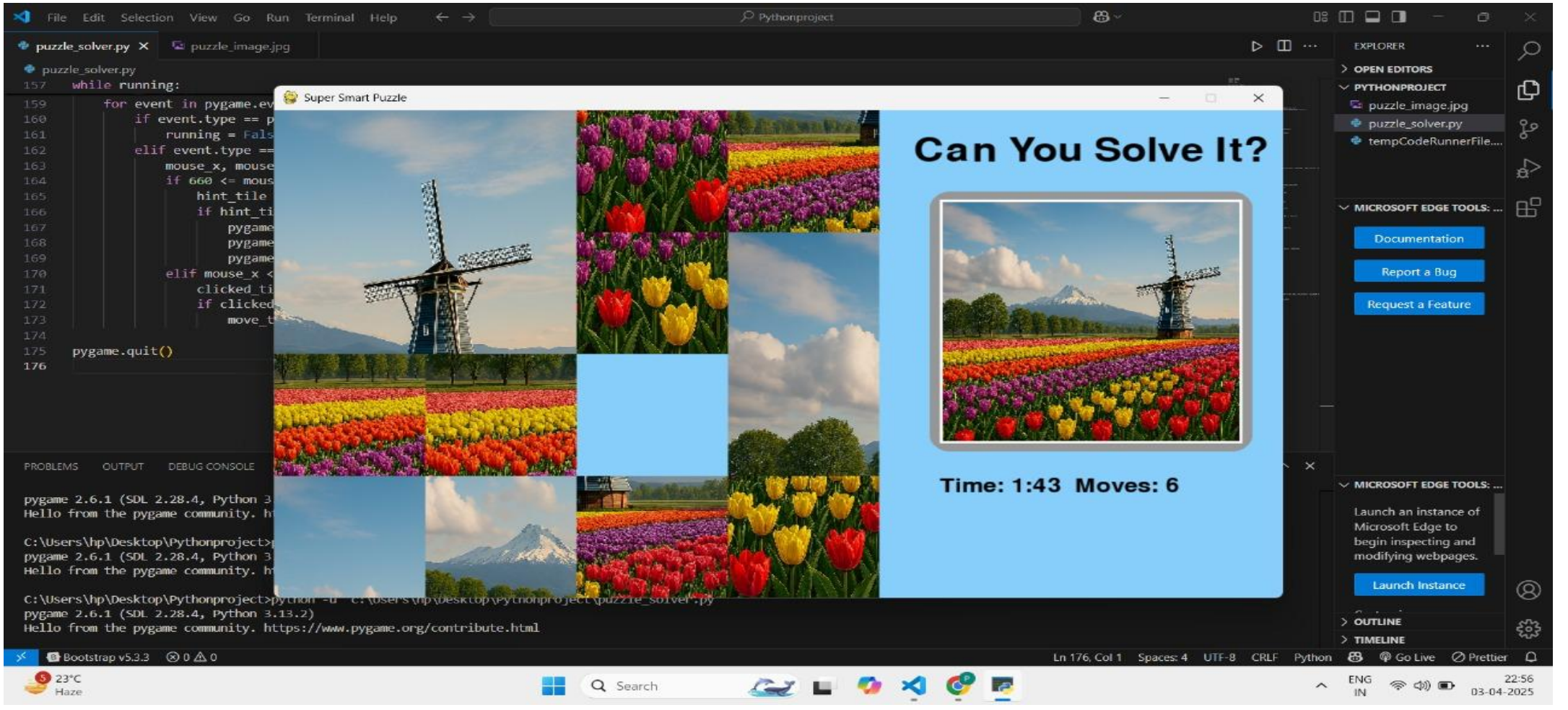
AI Auto Solver

Leaderboard & Multiple Mode

Enhanced UI/UX with Sound Effects

SCREENSHOTS

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puzzle_image.jpg
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OPEN EDITORS
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Documentation
Report a Bug
Request a Feature
Launch an instance of Microsoft Edge to begin inspecting and modifying webpages.
Launch Instance
OUTLINE
TIMELINE
while running:
for event in pygame.ev
if event.type == p
running = Fals
elif event.type ==
mouse_x, mouse
if 660 <= mous
hint_tile
if hint_ti
pygame
pygame
pygame
elif mouse_x <
clicked_ti
if clicked
move_t
pygame.quit()
Super Smart Puzzle
Can You Solve It?
Time: 1:43 Moves: 6
PROBLEMS OUTPUT DEBUG CONSOLE
pygame 2.6.1 (SDL 2.28.4, Python 3
Hello from the pygame community. h
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pygame 2.6.1 (SDL 2.28.4, Python 3
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C:\Users\hp\Desktop\Pythonproject>python -u "c:\Users\hp\Desktop\Pythonproject\puzzle_solver.py"
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Hello from the pygame community. https://www.pygame.org/contribute.html
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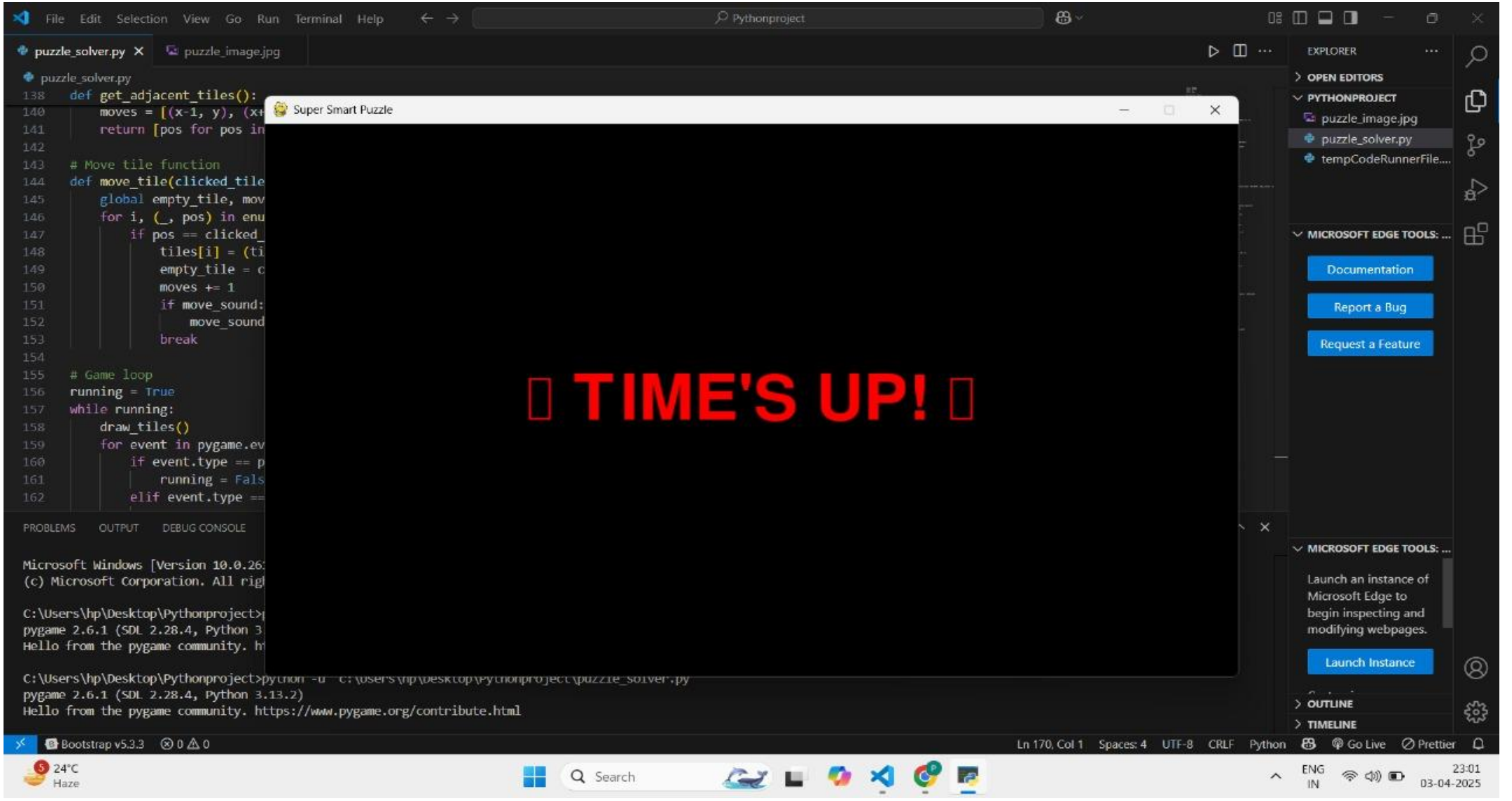
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Super Smart Puzzle
TIME'S UP!
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23:01
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Thank You

Puzzle Solver is a fun & educational Python project. It demonstrates Python¾s capabilities in game development and enhances problem-solving skills & logical thinking.