



Department of Computer Science and Engineering

Mood-Driven Interaction in Game AI: Design and Implementation of an Adaptive XO Game

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Introduction

Problem Statement:

- Traditional games do not adapt to player's emotional state.
- There's a need for intelligent systems that personalize gameplay.



Objective:

- To develop a Tic-Tac-Toe game that adapts its difficulty based on real-time mood detection using facial emotion recognition.



Dataset and Mood Detection

Face Dataset:

- Pre-trained models (e.g., DeepFace) are used to detect facial emotions.
- Emotions detected: Happy, Neutral, Sad, Angry, etc.



Game Architecture Technologies Used:

- Front-end: Pygame for GUI
- Back-end: Python (with OpenCV, DeepFace for emotion detection)

Architecture Flow:



- Capture face → Detect mood → Assign difficulty → Play game

Difficulty Levels:

- Easy: Random AI moves
- Medium: Heuristic AI
- Hard: Minimax algorithm (optimal AI)

CNN Emotion Detection Model:

- Pre-trained DeepFace CNN
- Inputs: RGB image
- Outputs: Emotion label

Implementation Details

Key Components:

- mood_detector.py: Captures image and predicts mood
- intro_screen.py: Displays mood and sets game difficulty
- game.py: Runs Tic Tac Toe with adaptive AI

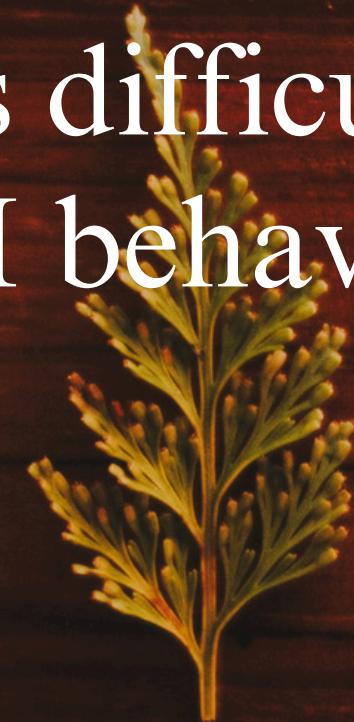


Design Features:

- Fully responsive game board
- AI changes difficulty based on user emotion

Results & Demo Screenshots:

- Intro screen showing mood detection
- Game board at various difficulty levels
- Sample outputs and AI behaviors



Outcomes:

- Accurate mood-based game adaptation
- Improved user engagement through dynamic difficulty

Conclusion & Future Scope

Conclusion:

- Successfully developed a mood-adaptive XO game using emotion recognition and AI.
- Showcased real-time user interaction with adaptive gameplay.

Future Work:

- Expand to multiplayer or other games.
- Improve mood detection with real-time emotion tracking.
- Integrate reinforcement learning for adaptive AI.

Q&A:

- Open the floor for questions.



