

# PROJECT DESCRIPTION

## Introduction:

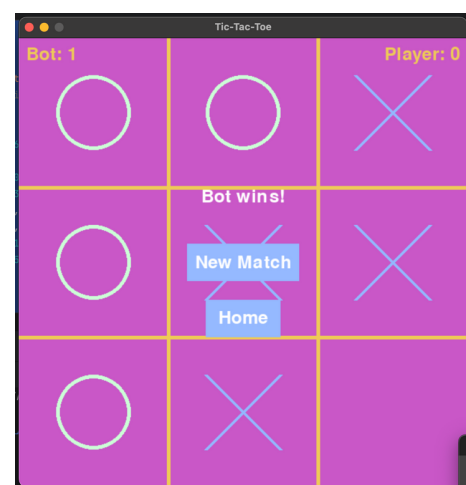
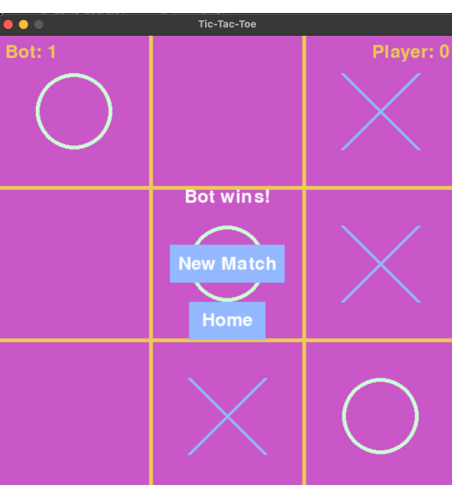
### Tic-Tac-Toe - A Classic Game of Wits

#### ■ Overview :

Welcome to the world of Tic-Tac-Toe, a classic game that has stood the test of time, captivating players of all ages. This simple yet engaging game pits two opponents against each other in a battle of strategy and skill. With a history dating back centuries, Tic-Tac-Toe continues to be a beloved pastime, enjoyed in various forms across cultures and platforms.

#### ■ Objective :

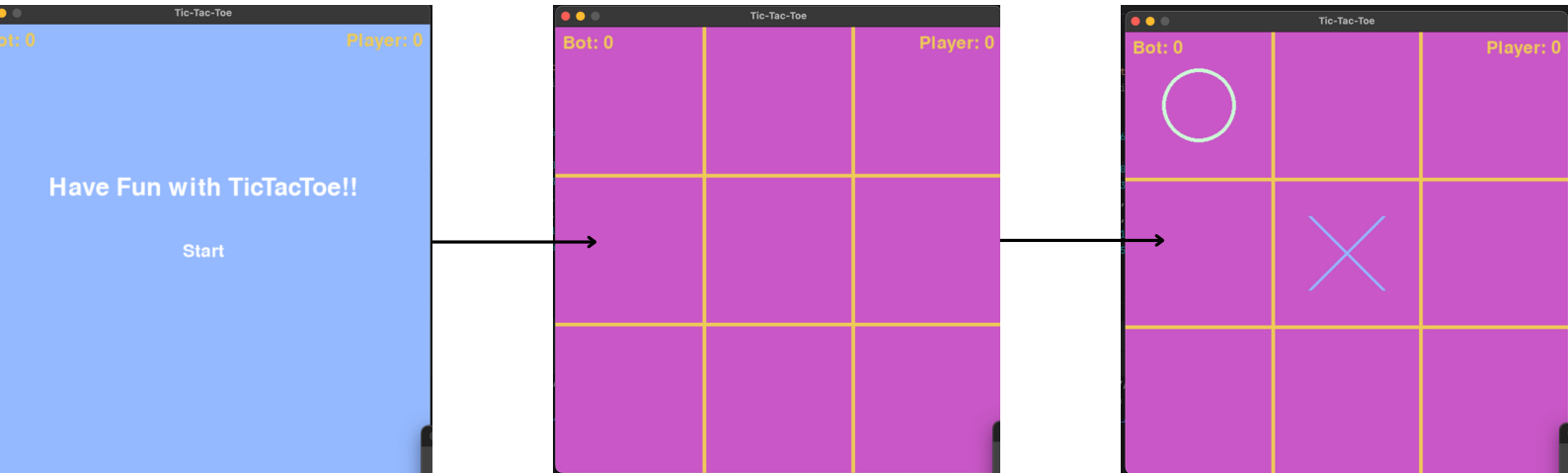
The objective of Tic-Tac-Toe is straightforward: be the first to form a horizontal, vertical, or diagonal line of three identical symbols on the game board. Players take turns placing their symbols ('X' or 'O') on an empty grid, with the goal of outsmarting their opponent and achieving victory. It's a game that is easy to learn but offers endless possibilities for strategic play.



## Gameplay and Rules :

# Gameplay:

- **Starting a Match:** The game begins with an empty 3x3 grid. Players alternate turns, starting with 'X,' and each player marks one cell on their turn.



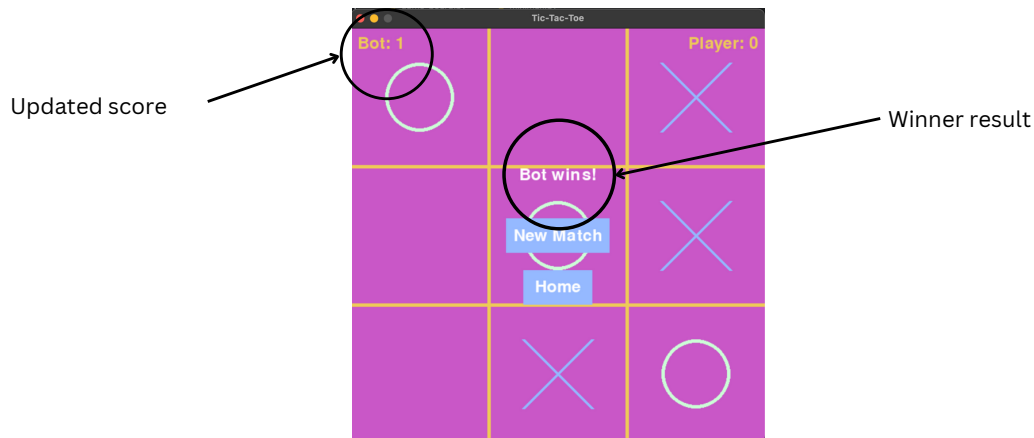
- **Winning Conditions:** A player wins when they successfully create a line of three of their symbols in a row (horizontally, vertically, or diagonally). If the entire grid is filled without a winner, the game ends in a tie.



- **Player and Computer Moves:**
  - **Player's Turn ('X'):** Click on an empty cell to place an 'X' symbol.
  - **Computer's Turn ('O'):** The computer uses the Minimax algorithm to make intelligent moves, providing a challenging

opponent.

- **End of a Match:** When a match concludes, the winner is declared, and the scores are updated. Players have the option to start a new match or return to the home screen.



## Implementation and Features:

### Implementation:

- **Game Board Class:** The game logic is encapsulated in a Python class named **GameBoard**. It manages the state of the game, including the board, player scores, and game status.
- **Minimax Algorithm:** The computer's moves are determined using the Minimax algorithm, ensuring a strategic and challenging opponent. The algorithm explores the game tree to make optimal decisions.
- **User Interface:** The game features an intuitive user interface built with the Pygame library. Players interact with the game through mouse clicks, and the visual elements enhance the gaming experience.
- **Home Screen and Buttons:** Players are greeted with a welcoming home screen featuring a "Start" button. After a match, options to begin a "new match" or return to the "home" screen are available.
- **Scores and Winner Display:** The player and computer scores are displayed during the game. When a match concludes, the winner (or a tie) is announced on the screen.

# Features and User Experience:

## Graphics and Visual Appeal:

The game's graphical elements are designed with a vibrant color palette to enhance the overall visual appeal. The grid lines, symbols, and buttons are neatly displayed, creating a user-friendly and aesthetically pleasing experience.

## Responsive User Interface:

The user interface is responsive, adapting seamlessly to different screen sizes. Players can enjoy the game on various devices without compromising the clarity of the graphics or the ease of interaction.

## Player Guidance:

To assist players, the game provides visual cues for valid moves and highlights the winning combination when a match concludes. This feature is particularly helpful for newcomers and adds an extra layer of enjoyment for all skill levels.

## Conclusion:

In conclusion, Tic-Tac-Toe transcends its simple origins to become an engaging and timeless game. This digital adaptation combines classic gameplay with modern design, offering players a delightful and challenging experience. Whether you're a seasoned strategist or a casual gamer, Tic-Tac-Toe promises fun and entertainment for all.