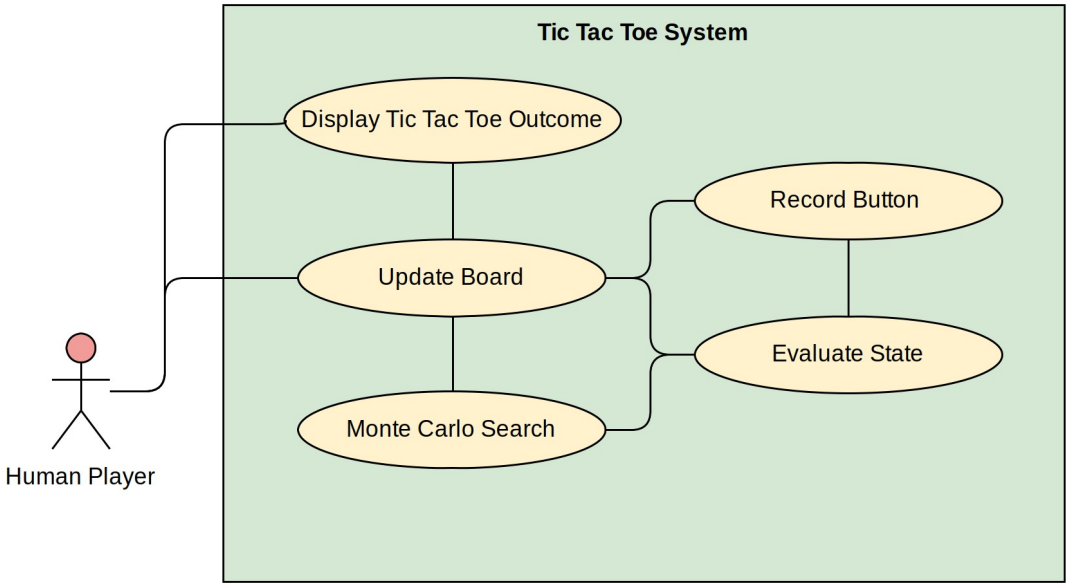
Use Case Diagram



Use Case Name	Display Tic Tac Toe Outcome
Participating actors	Initiated by Human Player
Flow of events	1. The Display Tic Tac Toe Outcome is activated by the Human Player when the player's choices are entered. 2. The Human Player's choices are passed on to Update Board, which uses this information to find the next move. 3. Update Board gives information to Display Tic Tac Toe Outcome on the next computer move, or if the game has ended.
Entry condition	• The Human Player selects an option presented by Display Tic Tac Toe Outcome
Exit Condition	• Human Player is informed if the game ended in a win, a loss or a draw.
Quality Requirements	• The move is instantaneously recorded and applied • The game ending status is immediately applied when available, otherwise board information is updated after 1500 simulations.

Use Case Name	Update Board
Participating actors	Human Player makes moves on the board.
Flow of events	1. Update Board is activated when it is provided with information by Display Tic Tac Toe on the Human Player's choices. 2. Update Board marks a Human Player move, and passes this information to Record Button. 3. Record Button allows Evaluate State to know the available choices for the next move. 4. If a game ending condition exists Evaluate State informs Update Board immediately and the game ending move is applied. 5. Otherwise, Evaluate State calls Monte Carlo Search to find the next move. 6. Monte Carlo Search informs Update Board on the next computer move. 7. The Human Player is presented with the choice of the computer.
Entry condition	• The Human Player has already activated Display Tic Tac Toe Outcome
Exit Condition	• The Human Player is presented with a new move on the board.
Quality Requirements	• The move is instantaneously recorded and applied • The game ending status is immediately applied when available, otherwise board information is updated after 1500 simulations.

Use Case Name	Monte Carlo Search
Participating actors	
Flow of events	1. Evaluate State calls Monte Carlo Search to evaluate the next move. 2. Monte Carlo Search performs 1500 simulated games. 3. The next move is found from the results of the simulated games and it is passed on to Update Board.
Entry condition	• Evaluate State cannot find an immediate terminal move.
Exit Condition	• Update Board gets the location of the next move.
Quality Requirements	• The move is instantaneously recorded and applied • The game ending status is immediately applied when available, otherwise board information is updated after 1500 simulations.

Use Case Name	Record Button
Participating actors	
Flow of events	1. Update Board informs Record Button on the button which the user clicked, and its mark. 2. Record Button stores this information, and provides Evaluate State with the buttons which are still available.
Entry condition	• Update Board gets information from the Human Player in the form of a clicked button.
Exit Condition	• Evaluate State has a list of buttons which are still available.
Quality Requirements	• The move is instantaneously recorded and applied • The game ending status is immediately applied when available, otherwise board information is updated after 1500 simulations.

Use Case Name	Evaluate State
Participating actors	
Flow of events	1. Record Button passes a list of available unclicked buttons to Evaluate State. 2. Evaluate State checks if immediate terminal moves exist. 3. If terminal game ending moves exist, Evaluate State passes this information to Update Board. 4. If no terminal moves exist, Evaluate State calls Monte Carlo Search to determine the next move.
Entry condition	• Record Button has a list of clicked, and unclicked buttons.
Exit Condition	• Either Update Board selects a terminal square to end the game, Or • Monte Carlo Search starts performing 1500 simulations to determine the next move.
Quality Requirements	• The move is instantaneously recorded and applied • The game ending status is immediately applied when available, otherwise board information is updated after 1500 simulations.