Tic Tac Toe Task Design and Pseudocode

# Game Loop Diagram

# AI1 Pseudocode

MakeMove():

If no. of playable spaces <= 5:

CheckWinningMove()

If winning move found:

Return winning move

Return CheckNonWinningMove()

CheckWinningMove():

Result = null

For each playable space:

If space not already in list of winnable spaces:

For each possible 3-in-a-row:

If CheckIfSetIsWinnable():

Add space to list of winnable spaces

If list of winnable spaces is not empty:

Result = random winnable space

Return result

CheckIfSetIsWinnable():

For each space in a possible 3-in-a-row:

If the space is not empty or an “X”:

Return False

Return True

CheckNonWinningMove():

If first turn:

Return centre space

Else:

Return random playable space

# AI2 Pseudocode

MakeMove():

If no. of playable spaces < 7:

CheckAttackableSpaces()

If attackable space found:

Return attackable space

Return CheckOtherSpaces()

CheckAttackableSpaces():

Unobstructed = true

NextToO = false

For each playable space:

For each possible 3-in-a-row:

If the playable space is in that 3-in-a-row:

For each space in that 3-in-a-row:

If that space is an “X”:

Unobstructed = False

else if it’s an “O”:

NextToO = true

If space is Unobstructed and NextToO:

If space not in list of attack spaces:

Add space to list of attack spaces

Else if space in list of attack spaces:

Add space to list of multi-attack spaces

Reset Unobstructed and NextToO

If list of multi-attack spaces not empty and Random (no. between 0 and 1) > 0.5:

Return random multi-attack space

Else if list of attack spaces not empty:

Return random attack space

Else:

Return null

CheckOtherSpaces()

If first turn:

Return random corner space

Else

Return random playable space