**AI Assignment – 02**

I have played 10 rounds of the Tic-tac-toe game with each algorithm and noted the result (Nagmani vs Computer)

Reinforcement Learning Result;

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| Rounds | Winner | Remark |
| Round-1 | Nagmani | Nagmani won in 4th move. |
| Round-2 | Nagmani | Nagmani won in 4th move. |
| Round-3 | Computer | The computer won because Nagmani made a mistake. |
| Round-4 | Computer | This time the computer won intelligently. |
| Round-5 | Draw | There was equal effort from both sides. |
| Round-6 | Nagmani | Nagmani won in 5th move. |
| Round-7 | Computer | The computer won in 3rd move. |
| Round-8 | Draw | There was equal effort from both sides. |
| Round-9 | Draw | There was equal effort from both sides. |
| Round-10 | Nagmani | Nagmani won in 3th move. |

**Conclusion:**

Human has won 4 times and the computer won 3 times and Draw 3 times. This shows relatively balanced competition between humans and computers. However, the algorithm may benefit from further optimization.

**Min-Max Algorithm Result;**

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| --- | --- | --- |
| Rounds | Winner | Remark |
| Round-1 | Draw | Both have put in equal effort. |
| Round-2 | Draw | Both have put in equal effort. |
| Round-3 | Draw | Both have put in equal effort. |
| Round-4 | Computer | This time the computer won because the human made a mistake. |
| Round-5 | Draw | Both have put in equal effort. |
| Round-6 | Draw | Both have put in equal effort. |
| Round-7 | Computer | This time the computer won because the human made a mistake. |
| Round-8 | Draw | Both have put in equal effort. |
| Round-9 | Draw | Both have put in equal effort. |
| Round-10 | Draw | Both have put in equal effort. |

**Conclusion:**

The computer has won 2 times and Draw 8 times. This shows that a computer is playing optimally because the computer is not going to lose either win or draw. Humans can make mistakes twice or thrice in 10 rounds game but the computer is not going to make mistakes. So, we can say that min-max is a better approach than reinforcement learning.