

### **CMPM 146 P2 Experiment 1**

For this experiment, we ran a series of simulations between two versions of the vanilla MCTS implementation. Player 1 was locked at 100 nodes, while Player 2 was run with an increasing number of nodes from 100, 250, 500, 1000. As expected, the higher number of nodes Player 2 had, the larger percentage of games it won. This is because a larger tree size means the algorithm can simulate a higher number of moves, improving its likelihood of choosing the best possible move. Since both players had a random rollout, there is a direct relationship between the number of nodes, and the number of games won.

#### **Results:**

	Player 1 wins	Player 2 wins	Draw
Player 1: 100 nodes Player 2: 100 nodes	55	45	0
Player 1: 100 nodes Player 2: 250 nodes	39	61	0
Player 1: 100 nodes Player 2: 500 nodes	18	81	1
Player 1: 100 nodes Player 2: 1000 nodes	16	84	0

