

# CSL 302 Artificial Intelligence

## Report Part (ii)

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**Sample Run of the Game** : Sample run of the game is shown in the file “*sampleRun.txt*”.

### Observation :

- (i) Effect of different weights of evaluation functions i.e. Combination of simple evaluation function and weighted evaluation function given by:  
 $\alpha * \text{evaluation}() + (1 - \alpha) * \text{weightedEvaluation}()$ .  
We vary the alpha for given depth of minimax = 4 and observe the readings.

Alpha	Winner	Score (User:Computer)	Difference (user-computer)
0.0	User	49:15	34
0.1	User	49:15	34
0.2	User	49:15	34
0.3	Computer	18:46	-28
0.4	Computer	1:58	-57
0.5	Computer	12:52	-40
0.6	Computer	11:53	-42
0.7	Computer	20:44	-24
0.8	Computer	29:35	-6
0.9	Computer	29:35	-6
1.0	User	33:31	2

We can see that the Computer's winning margin increases upto  $\alpha = 0.4$  and then starts decreasing from there.

- (ii) Effect of different depths of minimax search on the game outcome with  $\alpha = 0.4$  taken from last part .

Alpha	Winner	Score (User:Computer)	Difference (user-computer)
1	User	36:28	8
2	Computer	29:35	-6
3	Computer	27:37	-10
4	Computer	27:37	-10
5	Computer	20:44	-24
5	Computer	18:46	-28

Computer's margin of win increases as we increase the depth of the minimax search.

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