FILA: Assignment-3 Report

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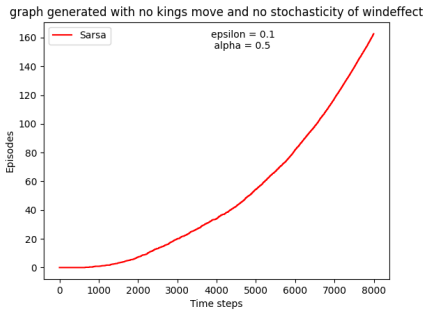
- I am running all the following algorithms for fixed timeSteps 8000 and observing how many episodes are done in those many time steps with alpha 0.5 and epsilon 0.1. And results are taken over the avgerae of 10 seed values independently.

1 Task1-3: sarsa tasks

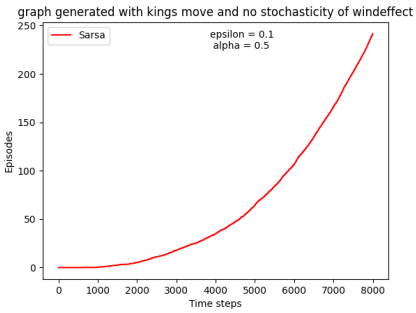
1.1 Observations

- Sarsa with stochastic wind effect and with kings move is taking longest to converge. see in the figure2(c). stochasticity here is adding more randomness to the task.It has completed around 59 episodes in 8000 timesteps.
- Sarsa with kings move and no stachosaticity is performing best and completed 240 episodes in 8000 timesteps figure1(b).Fastest to converge.
- Sarsa with no kings move and no stachasitcity has completed approx 160 episodes in 8000 steps figure1(a).It is performing better than first but not against second.

1.2 Plots

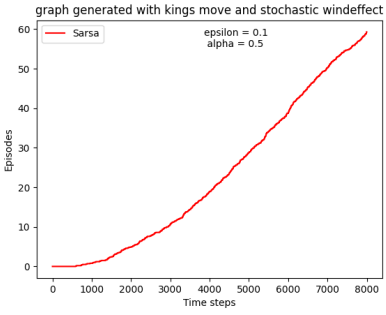


[a]



[b]

Figure 1: sarsa with no kings move and no stochasticity on the left and sarsa with kings move and no stochasticity on the right



[c]

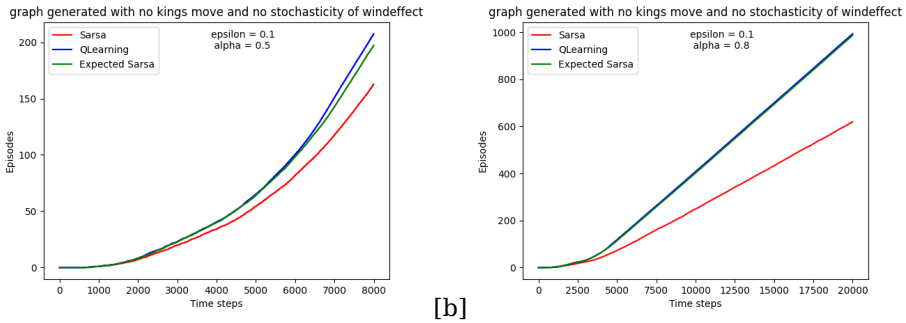
Figure 2: sarsa with kings move and stochasticity

2 Task4: comparing all three(QLearning, sarsa, expected sarsa) with no kings move and no stochasticity

2.1 Observations

- QLearning is working best out of three even on larger steps.
- for 20000 steps and if alpha is increased to 0.8 Qlearning and expected sarsa are performing almost similar still Qlearning has some edge.

2.2 Plot



[a] [b]

Figure 3: comparing three agent setting with no kings move and no stochasticity. 8000 timesteps on left and 20000 steps on right.