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# MA5895 : Numerical Optimization

## Combined Assignment Report

### Cell Tower Problem

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**Summary :** Hi

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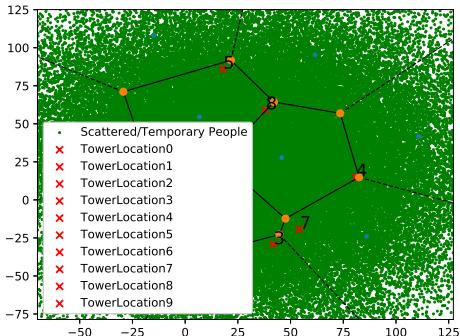
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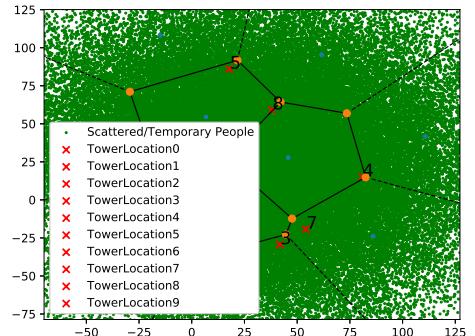
## **Problem Statement**

To solve the defined problem, SMDP and Intra-option Q learning is utilized. The optimal policy is the fundamental thing for used methods. To obtain the optimal policy using Q-learning, the initial states were randomly selected and goal is directed to hallway. likewise, eight policy is obtained. The state values are obtained using the maximum return.

$$V(s) = \operatorname{argmax}_{Q(s,a)} \quad (1)$$



(a) Grid world with goal G1



(b) Grid world with goal G2

Figure 1: Grid world of four rooms. Blue:Agent, Green:Terminal The grid world-1(a) has terminal state G1 and grid world-1(b) has terminal state G2. Arrow indicates the optimal policy. The policy in fig-1(a) is obtained using option-1 where as same in fig.-1(b) by option-2

## ***Approach to tackle the problem***

### ***Assumptions***

### ***Formulation***

### ***Results and Discussion***

## ***References***