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MAE 593A Robot Motion Planning HW1

There is a single file (script) named *main.m* This file contains two functions, the *Obstacles2d* and *isFree*. *Obstacles2d* takes in one argument which is the number of obstacles we intend to draw or generate by specifying vertices location. *isFree* function allows to check if a space selected in the configuration space is obstacle free or not. The two images below shows the results of running the *main* script. The grey region shows the polygonal shape of each obstacle. The blue square markers tells a point is obstacle free and the red markers indicate that a point selected is on obstacle

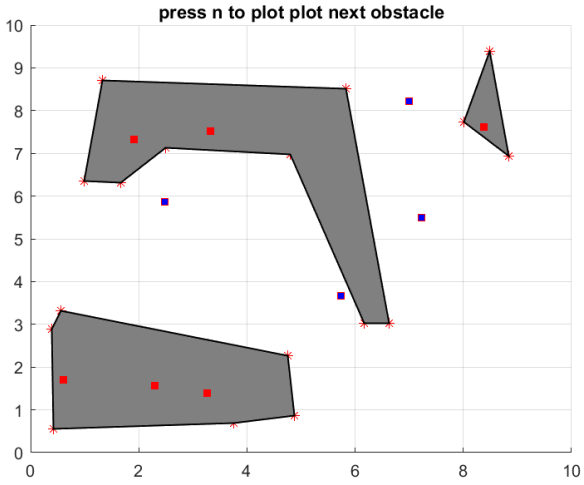

Figure 1: 3 Obstacles with different test points

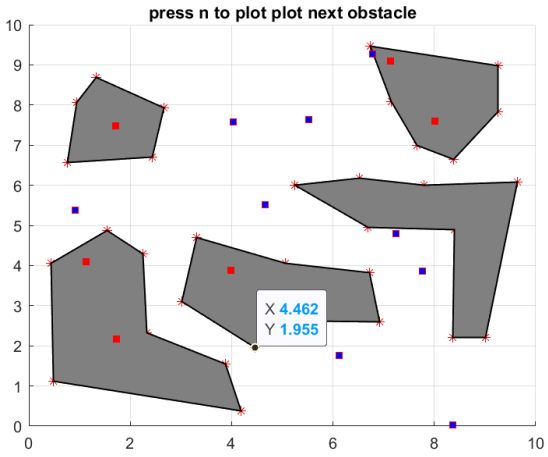

Figure 2: 5 Obstacles with different test points

Link to Video: https://youtu.be/sXXTKUxBPO4

Complexity: The time complexity of this problem is O(N) where N is the number of vertices. The storage complexity of the problem is equally O(N). This is because for each obstacle we have, we need to define and specify the vertices. A polygonal obstacle can have 3 or more vertices. Thus, the vertices play more role in affecting complexity compare to the actual number of obstacles