# Self-introduction

My name is Liu Yuxi come from institute of furture networks and my advisor is Wang Yi.

# Exercise 4-1

This week’s task is to select the initial center and initial partition for the k-means algorithm. We use the greedy algorithm mentioned early. First, we select a site as the initial center randomly. And the we iterate the following: select a site with the largest distance from the selected sites.

There are 15 sites in the picture. If we select the red one in the lower left corner as the first initial center, then we select the furthest site at the top of the picture, and the one on the right. Finally, through k-means algorithm, we get the partition as the picture show, this is the partition one, two, three. And we get the purple site as the the final center choice.

# Exercise 4-2

As the initial partition selection algorithm. I designed the algorithm based on the greedy initial center selection algorithm. First we select the initial center by greedy algorithm. And then we put each other site into the partition cloest to the partition center. Then we get the initial partition.

This is a harder case, we select the bottom left site in red as the first site we select. Then we get the initial center selection and initial partition selection as the picture show. We can see the two sites are in wrong cluster compare to the optimal condition. After one step we get the final partition that equal to the optimal condition.