

1. Introduction

The objective of the system is to optimize the total points of tile and area of the “Surround the Squares” problem. Given QR codes for the points of the squares and locations of the Agents, the Control Towers, at each stage, are in the position of knowing which square to move to. The decision made for each turn has its corresponding rewards and risks. Therefore, maximizing rewards by accumulating as many points as possible and minimizing risks by preventing the opponent from surrounding our squares are desirable.

2. Methods and Functions

2.1 Reading QR Codes

Using a camera, QR codes will be read and the points for the squares and the locations of the Agents are known.

2.2 Algorithms

Firstly, inputs are copied to a text file. Later, all squares and their corresponding points are gathered in a graph for better visualization.

At an Agent’s current location, there will be eight possible choices. The program employs a greedy approach. At each turn, a locally optimal choice *i.e.* the un-visited square with the most point, is being selected.

2.3 Implementation

For the implementation, we use Python.

2.4 Output

The program calculates the expected points to be accumulated.