# 5G Utility Planner

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Abstract

In order to help company to install 5G equipment on utility Poles, our first aim is to build our first dataset by Google street imagery. With machine leaning, we will import the dataset and analyze the poles in every image so that we can build a 2D model of the whole neighborhood. At the same time, our team members are going to use the knowledge of 5G and make an abstraction of each equipment as to build the final model.
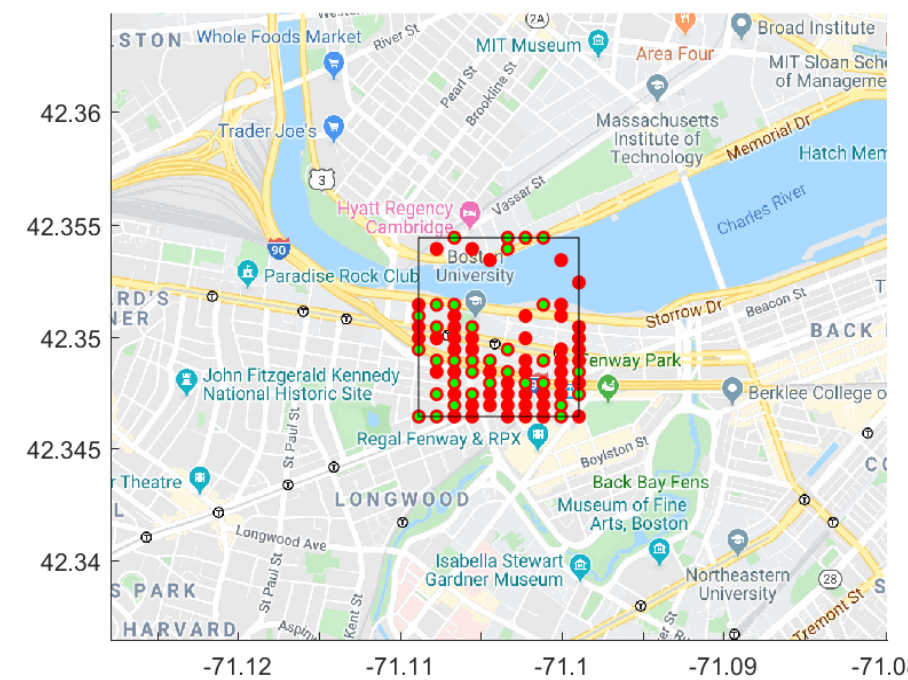
Web Design
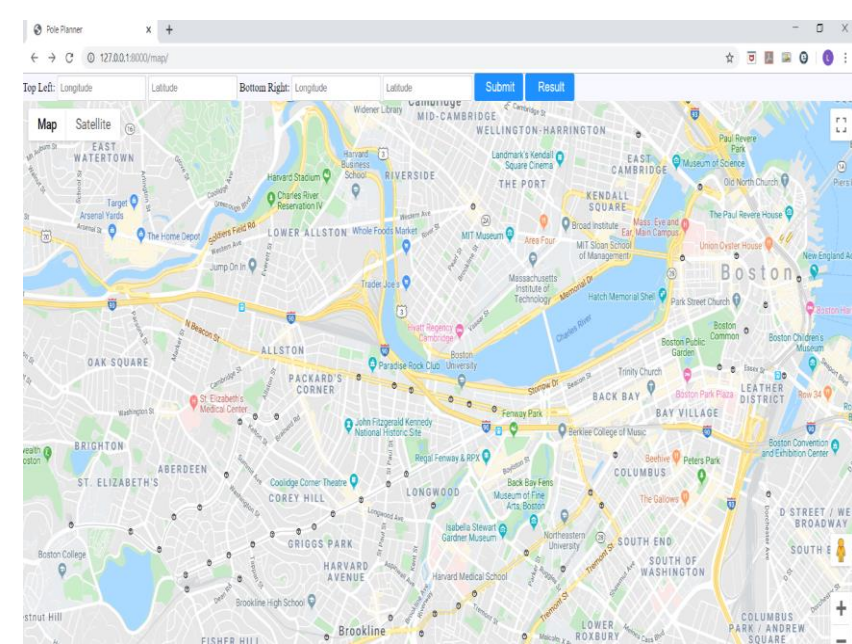
Web Page → Enter Coordinates → Static Street View → Save to folder → ML and MATLAB → Result

Planning

Basic CNN VS Mark-RCNN

In the detection part, our fundamental purpose is to detect whether poles exist in pictures or not. The methods are basic CNN and Mark-RCNN. After comparison, Mark-RCNN has the higher accuracy, but has lower speed than the basic CNN. In this demo, we used the basic CNN with the increased dataset, which contains 3,000 photos.
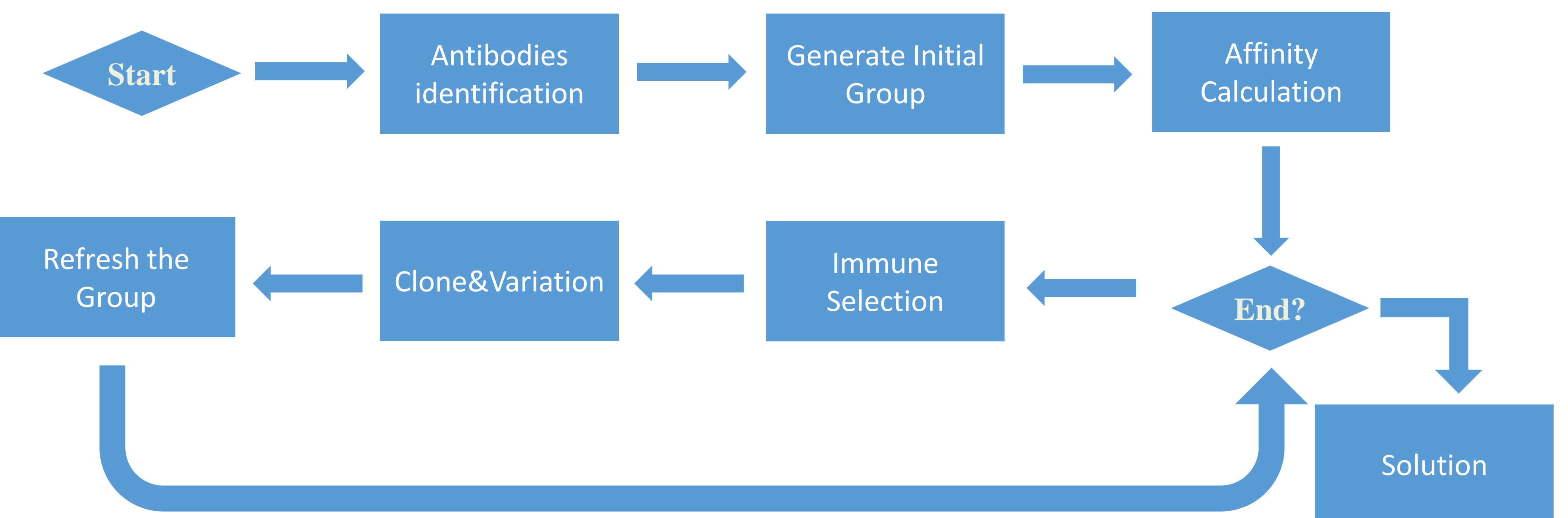

Result

● Poles Found!   ● Utility Installed
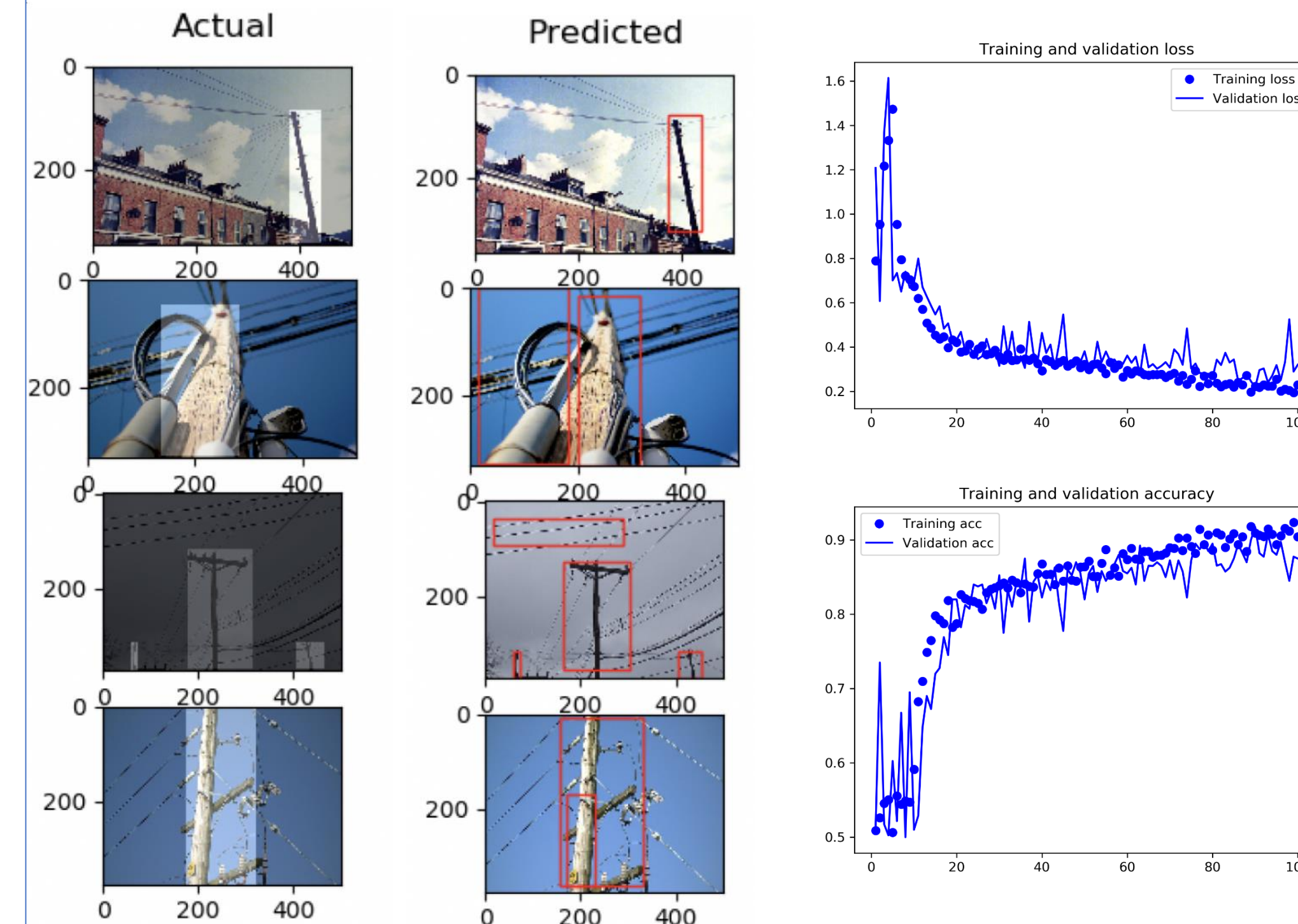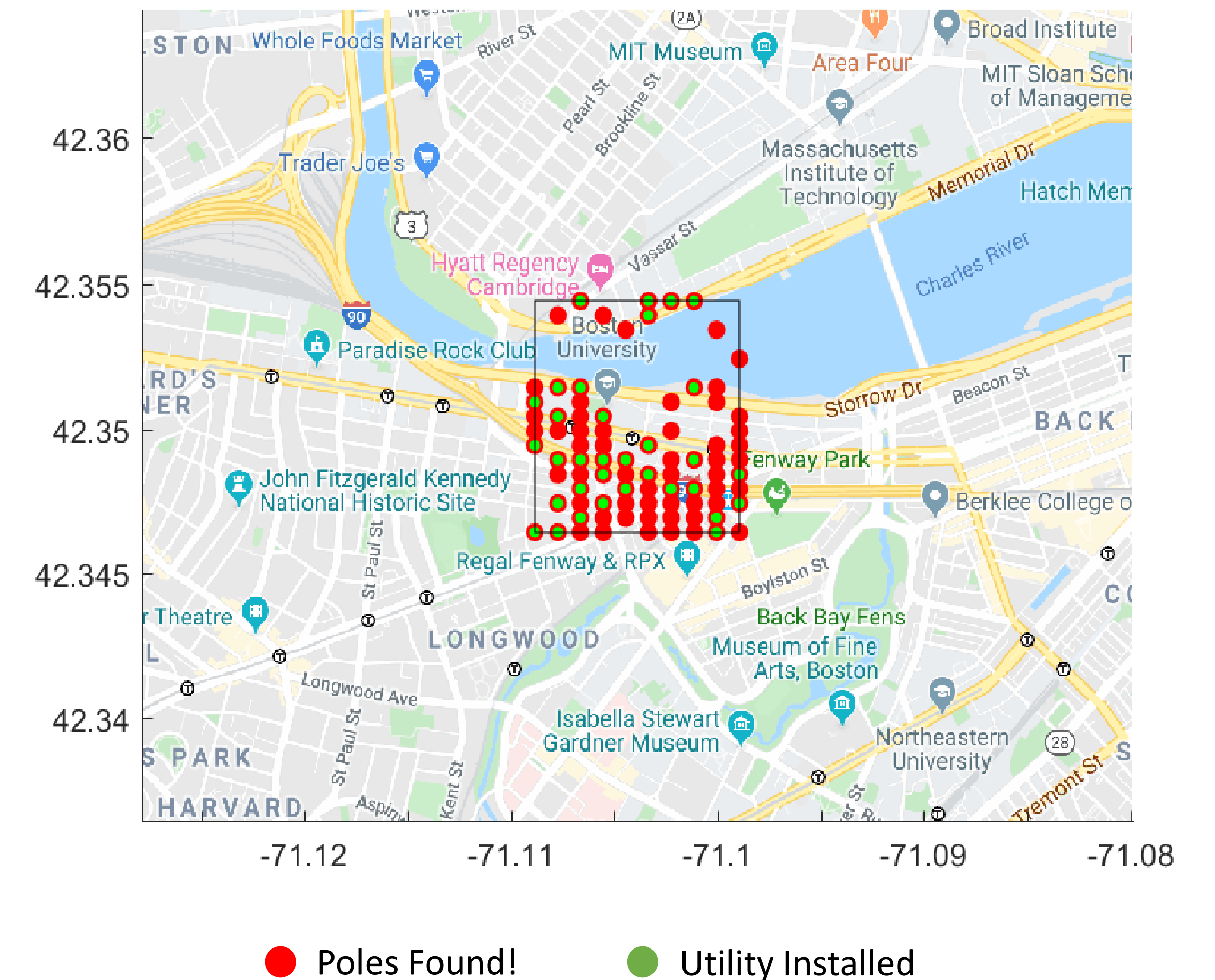
Algorithm

Immune algorithm (IA) is a set of computational systems inspired by the defense process of the biological immune system. This study proposed an optimization procedure based on IA framework to optimize the designs of water distribution networks

Start → Antibodies identification → Generate Initial Group → Affinity Calculation → End? → Solution

Refresh the Group ← Clone&Variation ← Immune Selection ← End?

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