Intelligent Agents - SoC

Assignment 3

April 07, 2020

1 Introduction

With assignments 1 and 2 you must have familiarised yourselves on how to simulate an outbreak of a pandemic given a set of simple initial conditions. Now in this assignment we would focus on data collection, analysis and tweaking the set of initial conditions to make our simulations more reliable and practical.

2 Case

There has been an outbreak of a contagious virus - **abc** in India in all the capitals of every state and union territory. Its presence has been detected today and we suspect the outbreak to be 5 days back. No case other than in capitals have been reported. So far there are 10 cases in every capital. Assuming that those who have already been infected could have travelled without being tested and spread the virus, the nation restricts foreigners from entering the country.

Acknowledging the fact that only a maximum of 120,000 people could be given proper medical attention on a single day, the country is faced with the challenge of flattening the curve. There are two solutions being provided by an expert panel :

2.1 Solution 1

Restrict travel to only 0.05 percent of the country's population in a day and are allowed to travel between states

2.2 Solution 2

Restrict travel to only 0.05 percent of the country's population in a day but **are not allowed** to cross state borders. Thus. allowing only travel within the state

Sanjev, an engineering student, reads the proposed solutions and concludes that there is absolutely no difference between both the solutions and the outcome would remain the same.

3 Problem Statement

Is Sanjev right or wrong?
Prepare a report on **Analysis of the Spread** through simulation with proper evidence and graphs. Your report must contain the top 5 states which your simulations indicate would be affected the most in both the solutions.
Also state what should be the rate of travel reduced to, to make sure that it doesn't peak above the maximum of medical facility our country can provide

- Get the travel data estimates (you can even make assumptions), Population of each state and its capitals from anywhere you like but please state it in the reference
- Assume the virus spreads to everyone within a range of 10 metres of an infected person

4 Teams

4.1 Team New York City

Abhishek, Tanay, Dev, Madhumitha, Aum

4.2 Team Los Angeles

Naman, Divyanshi, Prasann, Tushar

This is not an individual task. You do not help your friends from the other team in collecting data since data is of the essence here. Submit a pdf report on your github handle along with all the code, graphs et cetera. But you do need to have your report detailed since thats what is important and will be read.

Deadline : April 10, 2020 11:59 am