

# Epidemic

# Graph

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# Overview

- Introduction
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- Tools Used
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- Conclusions

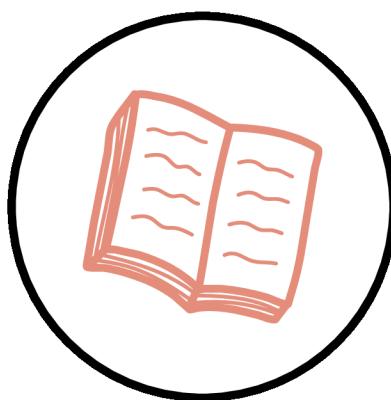


# INTRODUCTION

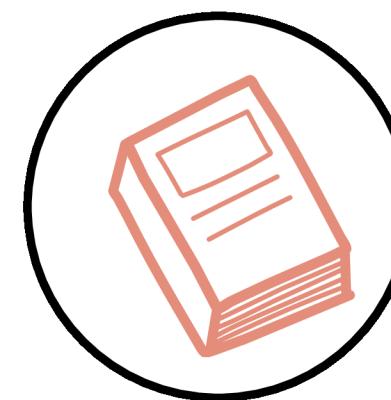
In the event of a viral outbreak, understanding how the virus spreads through different regions is crucial for effective response and containment strategies. Traffic data, geographic data, and population density are key factors that influence the rate and pattern of virus transmission between cities. Public health officials and city planners need tools to visualize and analyze the spread of the virus to make informed decisions.



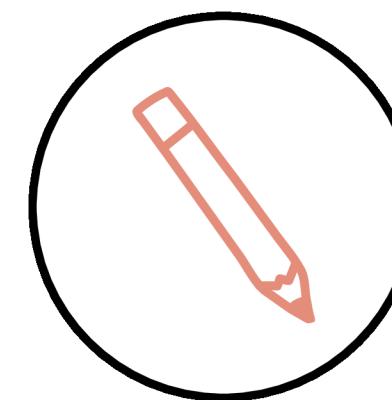
# Project objectives



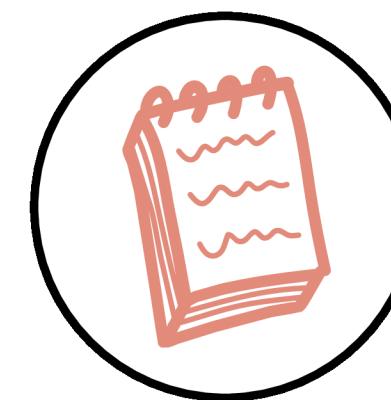
To simulate a wide spread of infectious virus between districts.



To study and analyse the risks of epidemic and take precautions properly



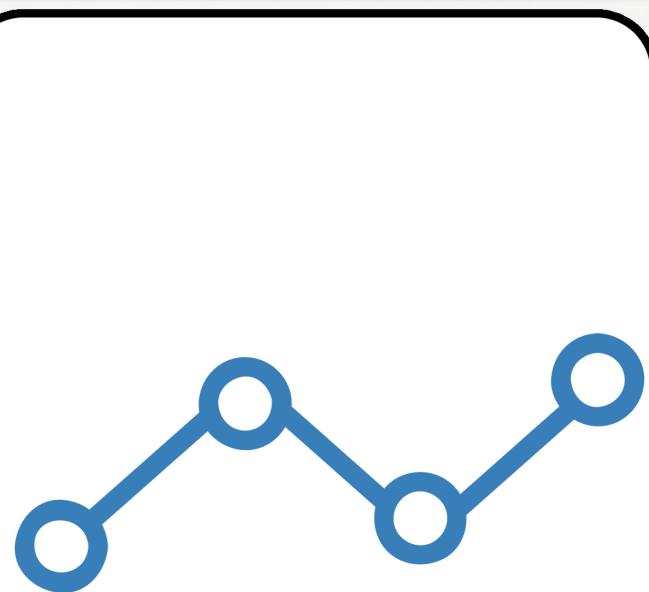
To implement the concept of graph and use it to create realistic visualization of epidemic spread



To use collection of data's and use them to analyze the simulation.

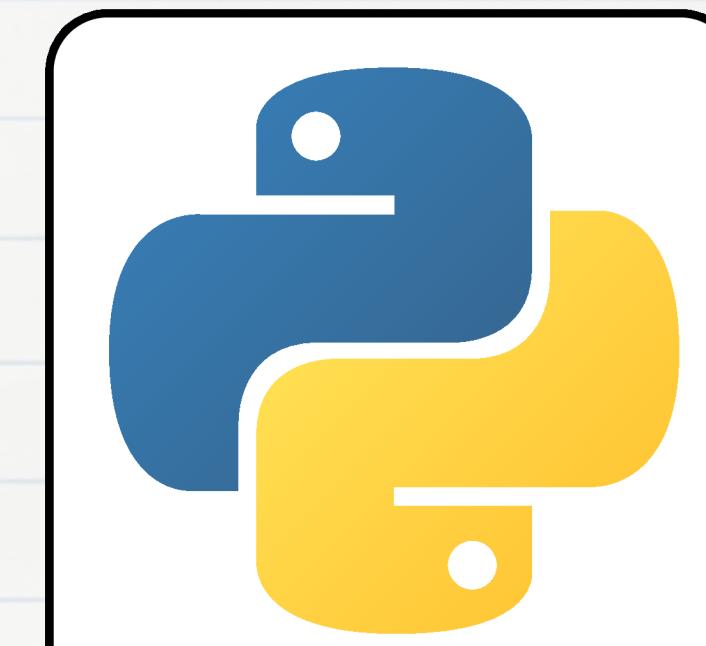


# Tools used



**Tkinter**

For creating GUI based application for better user experience and usability



**Python**

For programming and implementing codes



**Networkx and Matplotlib**

For creating nodes and implement graph with proper edges and weights

# Types of Data Used

## Connected Districts

consists of data where each districts have all the neighboring districts.

## Geodata

consists of latitude and longitude data to visualize each node i.e., districts in relatively same place as in map of Nepal.

## Population

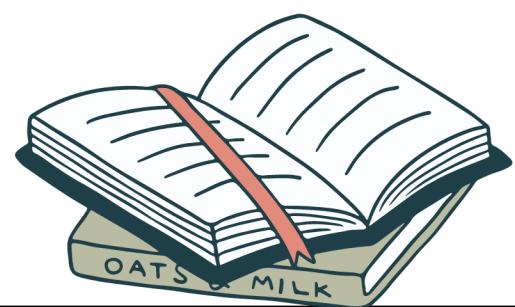
consists data about districts from population size to area covered by each districts.



# Workings

## Input

As application opens, we get asked with the infection rate of that virus. The user puts value from 1 to 10, such that it translates the infection rate out of 10



## Loading Data

Then user loads the data, where each districts are mentioned with their respective neighbouring districts.

## Loading Geodata

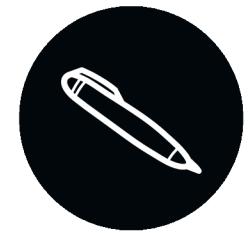
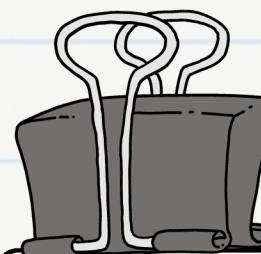
It contains data about relative geolocation of each districts

## Loading Population

It contains data of each districts where it has information about its area and population.

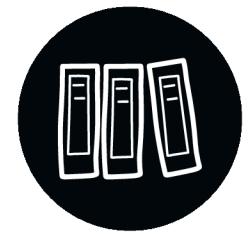
## Analyze

Finally all the datas are analyzed and graph is plotted using the analyzed data



### Pros:

- Data-Driven Insights: Provides a visual representation of infection risks and transmission pathways.
- Customization: Adjust infection rate and input various data sources for tailored analysis.
- User-Friendly Interface: Intuitive GUI for loading data and visualizing results.



### Cons:

- Data Dependency: Accuracy depends on the quality and completeness of input data.
- Complexity: Requires understanding of data formats and geographic information.
- Scalability: Performance may decrease with large datasets or highly detailed geodata.



# Conclusion

01



**Insights:** The app offers valuable insights into virus spread dynamics and helps in identifying hotspots.

02



**Decision Support:** Supports public health officials and policymakers in making informed decisions.

03



**Educational Value:** Serves as an effective tool for demonstrating virus transmission and control strategies.

# Thank You!

