CHAPTER 1
INTRODUCTION

1.1. Background

Epidemiology is an important study of the distribution and pattern of a disease outbreak in critical situation. It includes important data such as survey, supervision, data analysis and rapid assessment. Often times, society do not understand the importance of understanding epidemiology in order to hinder the spreading of virus to prevent much more critical situation.

This research is aimed to educate society on the importance of studying and understanding epidemiology to help medical staff concerning epidemic outbreak if it should be necessary on the event of another outbreak wave.

The data on this research are data which are formerly accumulated and analyzed to prevent double data points in the time-series graph, which then be used to understand the trends on the time series. Former trends are then analyzed using Naïve Bayesian forecasting theorem to predict future trends to prevent another outbreak.

The result of Bayes theorem will be applied on an over-laid map which will mark areas most affected and least affected by the spreading of SARS virus. This research will not show data per infected individual however it shows loosely the visualized prediction which make use of urbanization pattern to find out how far the virus can be exposed.

The usage of Naive Bayes theorem correlates to the formulation and identification of hypothesis for the epidemic itself. Epidemic searches patterns such as Person, Place and Time. Naïve Bayes can be used for classification of these factors and it can also be used to naively forecast the outbreak in days to come. And a part of Bayes theorem can be used to represent probabilistic relationships between diseases and symptoms. The usage of Bayes theorem is proven to be simple yet strong albeit naïve, which is suitable to study epidemiological factors and timeframe.

1.2. Problem Formulation

1. How does urbanized mobilization pattern affect the spreading of a virus in an epidemic?
2. Does prediction based on mobilization pattern differ from prediction without mobilization pattern?
3. How does the system predict the most affected area using urbanization pattern?

1.3. Scope

1. Summarizing dataset collected in time-series format
2. Implementing Bayes theorem to create probability model
3. The result of the system will then be compared and will then be visualized.

1.4. Objective

Create a program to predict the outcome of epidemic and comparing it to real life data to see how accurate it is and then visualizing the results based on urbanized mobilization pattern.