**CHAPTER 1**

**INTRODUCTION**

Humans had so many needs that pushed them to think critically to figure out how they would provide them. It led to the technological advancements that maintains their demands. The technological advancements rate is increasing rapidly with time and people are still developing and creating much easier ways to provide their needs and for making their work much efficient and easier.

One of the advancement of technology is the Artificial Intelligence and Natural Language Processing. It is also called as machine translation, it was already theoretically proposed by German philosopher Gottfried Leibniz and French philosopher Rene Descartes in late seventeenth century. Allan Turing in his paper “Computing Machinery and Intelligence” asked the question about “Can machines also think like humans?”, but it’s purpose is not to know if machines do thinks, but to win a game called “The Imitation Game”, and to determine if computer can have the human cognitive capacity.

According to an online article on Sas.com (2018) they defined NLP as a branch of artificial intelligence that helps computer understand, interpret and manipulate human language. Discipline in NLP includes computational linguistics in its pursuit to fill the gap between human communication and computer understanding.

Clarabridge.com (2018) discussed that sentiment analysis is the measurement of positive and negative language and it is a way of evaluating written or spoken language to determine if expression is favourable, unfavourable or neutral and to what degree. Further, Chipman (2017) in the book “The Oxford Handbook of Cognitive Science” stated that Natural Language Processing is one of important component of cognitive science. It does not seek not only automate human-level language processing but to seamlessly incorporate it into the overall cognitive functioning intelligent agents.

This study entitled “Sentiment Analysis on Marawi City Siege and Its Humanitarian Response Related Tweets” will focus on collecting data from tweeter and analysing the corpus on how it was correlated with each other and providing visual presentation.

**Significance of the Research**

There are so many kind of calamities or disaster and one of them is a man-made disaster which is “war”. In these specific calamity it also has a different response needed and with the application of Natural Language Processing it will help agencies and other people to understand what the victims of a war really is. Specifically this study will be beneficial to:

**DSWD**. The study will provide ideas for the agency the different kinds of things needed of the people that was affected by the war. It will also help them through the use of social media to reach out other agencies or people to ask help on the specific needs or response.

**NDRRMC/MDRRMC**. The result of the study will provide them information on how should they respond to this kind of scenario and for them to know how mass media could help them.

**Department of Defense.** The study will provide insights to the agency on how society reacts from their action on maintaining peace in the country.

**Researchers.** The researchers learn immensely on the development of this application. This may be used as a stepping stone to aim for the job that the researchers certainly want.

**Future Researchers.** This will be of great motivation to the future researchers / neophyte inventors for them to pursue their ideas no matter how intimidating it may sound.

**Society.** The result of the study will providing how people in the society reacts through use of social media in providing assistance in situations like war.

**Students.** It will provide learning how NLP works and how the algorithm used in the study help the researcher achievement of the study.

**Teachers.** This study can be used by the teachers to explain how NLP application works and help students to be motivated to study this branch of computer science which includes the discipline of Artificial Intelligence, linguistic and machine learning.

**Statement of the Objectives**

**Objectives of the Project**

The proposed study is focused on researching on Natural Language Processing using sentimental analysis to know the sentiments of “netizens” regarding to the Marawi City Siege and what kind of humanitarian responses are provided and classify marawi siege tweets using three classes- positive, negative, and neutral with two classifier algorithms Naïve Bayes Algorithm and Learning Vector Quantization Algorithm.

**Specific Objectives**

Specifically it aimed to meet the following objectives:

1. To gather Marawi Siege related tweets.

2. To implement Naïve Bayes algorithm and Learning Vector Quantization algorithm to classify the tweets as positive, negative or neutral.

3. To test the effectiveness of the trained model with accuracy, precision, recall and f-test evaluation.

4. Showing Graphical representation of the sentiment in form of Pie-chart , Bar Diagram and Scatter Plot.

**Scope and Delimitations of the Project**

The study aims to monitor on how social media user or “Netizens” or the masses react on current happenings and understanding their awareness towards the events. The study will be useful for government agencies like NDRRMC, DSWD, and Department of Defense. Similarly other private agency that served as mentioned agencies can also use this study for the same purposes.

The study will provide discussions of the features of the system, the effectiveness of the algorithms used in the study, the presentation of the result and the general acceptability of the study.

However, the study is only delimited to use Naïve Bayes Algorithm and LVQ algorithm and no other algorithm shall be explored. Respondents of the study will came from the agency mentioned that will assess the general acceptability of the study. As for the time, this study is only delimited for five (5) months, from November 2018 to March 2019. Moreover, the interpretation and analysis of the data will be performed one (1) month.

**Definition of Terms**

The following terms related to the research are defined conceptually and operationally for better understanding of the terms used in the study:

**Artificial Intelligence –**The branch of computer science that deals with writing computer programs that can solve problems creatively.

**Natural Language Processing –** The branch of information science that deals with natural language information or human language technology.

**Sentiment Analysis –** The process of computationally identifying and categorizing opinions expressed in a piece of text, especially in order to determine whether writer’s attitude towards a particular topic, product, etc. is positive, negative or neutral.

**Humanitarian Response –** is material or logistical assistance for humanitarian purposes, typically in response to humanitarian crisis including natural disaster and man-made disaster.

**Naïve Bayes Algorithm -** is an algorithm that uses Bayes' theorem to classify objects. Naive Bayes classifiers assume strong, or naive, independence between attributes of data points.

**Netizen –** a user of the internet, especially a habitual or an avid one.