# **SOCIAL MEDIA TEXT CLASSIFICATION AND FILTERING USING SUPERVISED LATENT DIRICHLET ALLOCATION**

## **INTRODUCTION**

Messaging service and online messaging services has served as a platform to bring people together in respective on distance and differences between them. With click of button, people can relate with each other and share opinions, knowledge and moments with one another using different multimedia means such as images, videos and audios. Platforms like Facebook, Twitter, Instagram has removed the distance barrier between people and make interaction within human seamlessly easy. Messaging services such as BBM, Whatsapp and Snapchat has also added to the ease of communication among humans around the world.

Recently, social media and messaging services has evolved from bringing people together in terms of personal relationship to bringing people and corporate organization together. Platform like Twitter enables corporate organization to provide relevant information to their followers. Aside Clients to corporate organization relationship, messaging services now promote the creation of group on messaging services by enables a set of user to come together and share relevant topic and information has concerned them.

A group of student could create a reading group on messaging service in order to promote understanding. Team members working on a project could create group to share updates and resolve issues concerning the project. Committee member could create a group to discuss any issue pertaining to the problem they need to solve even when the members are not physically present, thereby increasing the rate at which decision is made and the quality of such decision. Additionally, trainees and trainer could also create a messaging service group to facilitate good relationship between the trainees and the trainer and thereby increasing the quality of knowledge gained and the time taken to learn from the trainees perspective.

The benefits of this platforms was also increase by the recent ability to upload and share multimedia content. For example Facebook and twitter now enables user to upload not just images but videos and audio that can be played immediately on the platforms means you are not limited to share a static image of an event, you can actually post and share videos of events online for people to see using these platforms. In fact, it is possible to post a mini-tutorial online for teaching and learning purposes.

The importance of these platform is enormous judging by the benefits and opportunities it provides for the users(both personal and corporate users). However; recently, due to the ubiquity of Internet and its growth, there has been drawback caused by the misused of these platforms. The next section present the recent drawback faced by messaging service and social network services.

## **PROBLEM STATEMENT**

The use of Internet and the ubiquity of social media and messaging services ,has continue to increase the richness and quality of information shared between individuals and group on the social media and messaging platform as established in the previous chapters. From different post of Facebook, tweet and trends on tweeter and shared messages on Whatsapp group and BBM channels, the rate of information dissemination has drastically increased. Users of this platform has a rich source of information at their fingertips; from job and employment information to medical and health tips, safety tips and religious contents.

Recently, a new use has been found for the social media platforms, new type of user has emerged: people that want to use social media to promote one campaign or the other; people who want to use social media to promote fraudulent activities. Social media platforms has also become a means for users like this to promote their interest. In other words, social media platform has become a means for people and corporate organization to advertise their product or services.

A writer will want to show his/her writing skill by writing and intelligently crafted article and post it on the social media based on his/her genre of interest. Comedian will post funny messages to show his/her sense of humor and attract his/her set of audience. Politicians post their campaign messages to win the heart of the messages. In short there is not restriction to type of message that can be posted. However, different user has preference for the type of article and post they will want appearing on their post.

Also messaging platform such as Whatsapp does not restrict the type of messages that can be posted or shared on the platform thereby exposing user of this platform s type of unwanted message shared between both users and group. Also, some malicious user use this opportunity to send fraudulent messages and broadcast to user and the group exposing to users of this platforms to fraudulent attacks.

As a result, there is a need to provide an efficient means through which user on social media and messaging services can filter messages on their walls and phone respectively and also. Thereby enabling the users and group administrator to control the type of messages displayed on their walls and in the group.

## **AIM AND OBJECTIVES**

The aim of this research is to create a means to accurately filter social media text content based on user selected topic.

The objectives of this research are:

* To preprocessed text content using short words and abbreviation dictionary.
* To preprocessed text content using smiley dictionary.
* To improve short text classification by expanding title in a text repository.
* To extract lexical and semantic text classification features from text.
* To classify text into category using machine learning algorithm.

## **LITERATURE REVIEW**

Much efforts has been made on text classification and online social network filtering. This section review related literatures on social media filtering and text classification.

Khurshid, et al., (2014) presented a text-based intelligent content filtering on social platform using concept from sentiment analysis, opinion mining, feature engineering and text classification to classify social media text into positive or negative based on the text content. This paper uses features like sum of polarity scores,count of negative polarity scores, score of negative polarity score, count of positive terms,count of negative terms andd ratio of terms. Naïve Bayes algorithm and decision tree algorithm was used for text classification. The result obtained showed a significant efficiency improvement over techniques that uses url scanning and keyword search.

Yang, et al.,( 2013) combined lexical and semantic features for short text classification. According to the authors, short text classification is a challenging problem for text classification given that there is usually less information to successful classify the text based on the content. Therefore a background knowledge repository was used to expand the meaning of the short text. Topic modelling approach is then used with lexical and semantic features to successfully classify the text.Latent Dirichlet Allocation(LDA) was used as the probability model to learn and extract semantic features from the used dataset.Also , word weight mapping was used used to obtain the semantic features and to reduce the feature and Support Vector Machine(SVM) as the machine learning classification techniques.

Sboev, et al.,( 2016) proposed a means to categorised authors gender using topic-independent features. According to the paper, morphological and syntactics features were extracted and then trained on an Artificial Neural network classifier and other classification algorithms like Gradient Boostting Classifier, Adaptive Boosting Classifier, ExtraTrees , Random forest and support vector machine. The accuracy of each of the algorithm is then compared.According to the experiments performed in this paper , it was dicovered that ReLU with one hidden layer has the best accuracy.

Masson, et al.,( 2015) models the posting behaviour of users on social media network and also poposed a technique for performing content active filtering on social media platform. One of the objectives for this paper according to the author was to increase content diversity among users on the social platform using content active filtering.The research focused on the quantity and diversity of the of content posted on the social media platform. Dynamic stochastic model was used to model the user posting behaviour by considering the popularity of the posted content and how it affect users decision to post.The content active filtering was done by using a relationship matrix of all the allowed topic based on the posting model of the user.A policy vector is provided to dynamically converge on the relationship matrix.

Singh & Kumari,(2016) show the need for text preprocessing in twitter sentiment analysis. One of the problems considered by this paper is the fact that twitter messages usually include short text,slangs, new words, url and abbreviation; therefore there is a need for text preprocessing to done on the text before sentiment analysis in performed on the text. The main preprocessing proposed in this paper is text normalisation and it include other sub-processes such as non-english word removal,url removal,tag stripping, spelling correction, slang replacement and word normalisation. Spelling checking was done using word Net dictionary and slang replace was done using N gram mmodel. Support Vector Machine(SVM) was used as the machine learning classification algorithm.

## **METHODOLOGY**

Having explain the aim and the problem this research is trying to solve, this section discuss the method that will be employed in solving the problem. As stated in the aim and objective section of this document, there is a use of two dictionaries: the smiley dictionary and the abbreviation dictionary. Smiley dictionary will be built using online smiley translation websites such as webopedia. The abbreviation dictionary will also be built using online sources like webopedia.

Wikipedia will be used as the source for expanding short text alongside with the ‘am feeling lucky’ feature of Google will be used to get the best document online that matches the short text for better classification.

This project will employ Latent Dirichlet Allocation for text classification as a result of its stochastic nature and its popular use with text classification and topic modeling.

In terms of software tools, the following tools and environment will be used

* **Python** will be used as the programming language along with the natural language processing toolkit.
* **Sci-kit learn** will be used as the machine learning framework.

The next section discuss the scope of the project.

## **EXPECTED RESULT**

The previous sections presented the overview of the project, the problem statement, the literature review and the methodology. This section will project into the result proposed to obtain at the completion of the project.

At the completion of this research work, a usable dictionary of smiley and abbreviation will be created based on the popularity and usage rate of those smileys and short abbreviation. Also a social media text classification model will have been developed that reduce noise in social media text classification problem using Latent Dirichlet allocation.

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