

Emergency Voice Assistant Using Naive Bayes

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Abstract:- Notification, an easy way to inform the user about an event. The predominant presence of virtual assistants, translators allows for a significant availability of data. The increased computational power also encourages a wider development of deep learning methods. The messages are divided into words which are then processed. This paper aims at detecting situations of emergency by processing the dataset. Recently, machine learning has achieved a lot of impressive results in vision, speech recognition, and elsewhere. In the field of text analysis, there have already been researchers using deep and machine learning models to gain better performance.

Keywords:- Human Smartphone Interaction, Voice Assistants, Supervised Learning, Binomial Text Classification, Naive Bayes.

I. INTRODUCTION

In mobile phones, the notifications describe an easy way to the user about an incoming event such as messages, reminders, alarm and other system messages. Notifications have been constantly modified and updated with time. There are many situations where the user is not able to attend the message quickly, say when the users are attending a meeting or driving the vehicle. It is not possible to look at the mobile and read notifications.

The possibility to collect and store large amounts of data captured by notifications enables the search of connections among data and the effects of natural events that generate great damages to people and things. Here we aim at detecting emergency situations processing data set of sampled data through Naive Bayes Classifier.

Naive Bayes classifier is one of the supervised classification techniques which classifies the text/sentence that belongs to a particular class. It is the probabilistic algorithm which calculates the probability of each word in the text/sentence and the word with the highest probability is considered as output.

It mainly explains the assumption that can be done in a huge range of classification ranges. It mainly calculates probability values. It can clearly check the probability of values to every element or in other words texts and gives the output which has the highest values in probability.

A. Android

The only Operating System which most of us use daily and some every minute. Until the smartphones exist, the android exists and in the near future, the android or smartphone trend increases rather than decreasing[6]. Even if a new technology appears, the android won't degrade its features. Being an open-source project, anyone with programming experience can customise the android as they need, can also develop and publish an app in the play store causing an increase in its usage over the Smartphone users.

B. Android Main Components

➤ Activities:

The user interface and most of the user interactions are defined here.

➤ Services:

These are a type of programs which can run in the background and with indefinite uptime. Triggers are defined to start, pause or stop these programs. Usually, they start with the operating system and wait until an application requires it. The activities can be invoked using intents in general and these are used to pass data from one activity to another, defines the data connectivity internally within an application.

➤ Broadcast Receivers:

Broadcast receivers are the one main component which provides the information about any change in the state of the operating system or software components. For Example, if any notification occurs, the operating system broadcasts to all the notification listener apps as notification has been published.

➤ Content Provider:

The content provider, a component which handles the data and connectivity to the database. It provides the interface between two applications. Sentiment analysis is one of the important parts of understanding how human beings deal with text information and has a wide application in the industry. The process of understanding if a given text is talking positively or negatively about a given subject (e.g. for brand monitoring purposes).

Text classification also known as text tagging or text categorization is the process of categorizing text into organized groups. By using Naive Bayes Classification, text classifiers can automatically analyze text and then assign a set of pre-defined tags or categories based on its content.

II. RELATED WORK

Recently, Voice Assistants are available in the market with a wide variety of implementation platforms. Amazon and Google both have rich values to the devices for their use of voice assistants. Anyone who is related to the voice-activated device can ask questions to it, can even gather some information which is related to accounts and services connected with the device, and make it perform certain tasks. This acts as a major security risk because these devices can give the information stored in calendar, email, and other highly confidential information. Google Assistant also has a high collection of several tools which allows the receivers to make or show their own skills. Using various services like Tasker and If This Then That, it can prove users a platform to implement skills related to these, that helps them to show various social media posts and other possibilities.

For example, we are using the Assistants to say "Morning!" and this makes it do things which are previously assigned to or are related to the morning schedule like, reading the news, telling the local updates, turning on hot water and giving calendar events for the day, setting the thermostat, opening and locking the doors if required, doing the things which are done in a routine way and also making the things which are connected to the Assistant. Sometimes also by the orders given it can make phone calls, sends emails, gives directions while driving. But this is all done when the command is given.

Voice Assistant can have some interesting features where they can identify different problems. It can only read the messages which are received but cannot classify as important or not. Spam detection cannot guess on the person's basic emotions on which they rely on. It is only connected when the Voice Assistant can truly tell what happens every time[7]. Voice assistants, now have the ability to revolutionize translation. Even recently Google has announced a new pair of earbuds which can be paired with the voice assistant for real-time and on the go translation. And users can use the application for any help in speaking and understanding any language. This application captures audio spoke by other person and translates using speech to text, translates to other language and plays the required version of the user in the user's earbud.

III. PROPOSED WORK

Even spam detection is not a thing, anti spam, by using a set of datasets and information received by the live users, it can classify all the data if it is spam or ham. Neither it can really detect the emotions of a person as needed nor if it is a real ham who wants to fool their friends. By developing a voice assistant that could detect an emergency message could increase a person's health and others at ease[4,5]. When it is integrated in a Voice Assistant, it could help a lot for the users unknowingly.

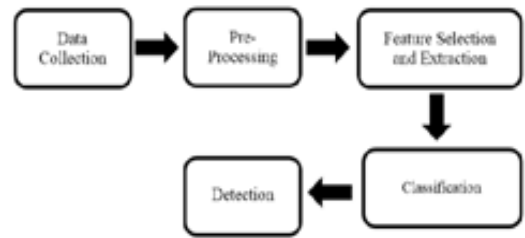


Fig 1:- Workflow process

The Notification Listener waits for any message broadcasts from the Operating system. When any change happens in the message channel, It gets the input and sends it to the Naive Bayes Classifier. Where it classifies the percentage of a message based upon the keywords in the dataset, based on the result percentage, message is classified. The Notification Listener gets the message contents to the model for the processing.

$$P(A|B) = \frac{P(B|A)P(A)}{P(B)}$$

Naive Bayes, primarily depending on the probability for analysis, it is useful for classification and results are in success and confidence percentages. It predicts the event based on a previously occurred event. So Naive Bayes theorem is used for supervised machine learning model[8]. Multinomial Bayes theorem is used for classifying the word occurrences in a sentence, whereas, bernoulli theorem is used to classify between two outcomes.

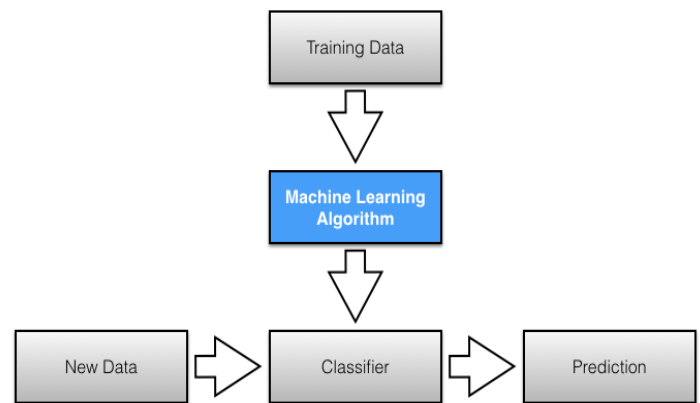


Fig 2:- Supervised Learning

In many cases, people talk about entities that have many aspects (attributes) and they have different opinions about each of the aspects, the SA contributes to decide which one is a positive or a negative one. This often happens in product reviews and so on.

A. Experimental Results

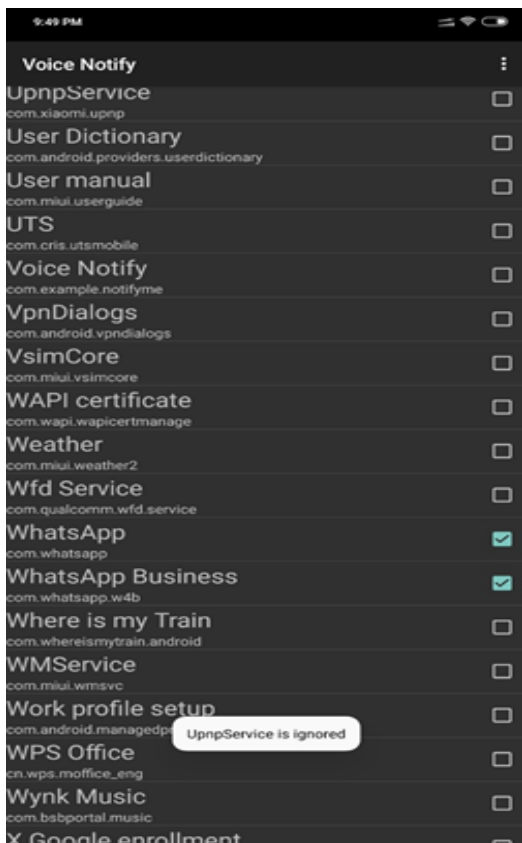


Fig 3:- Voice Notify

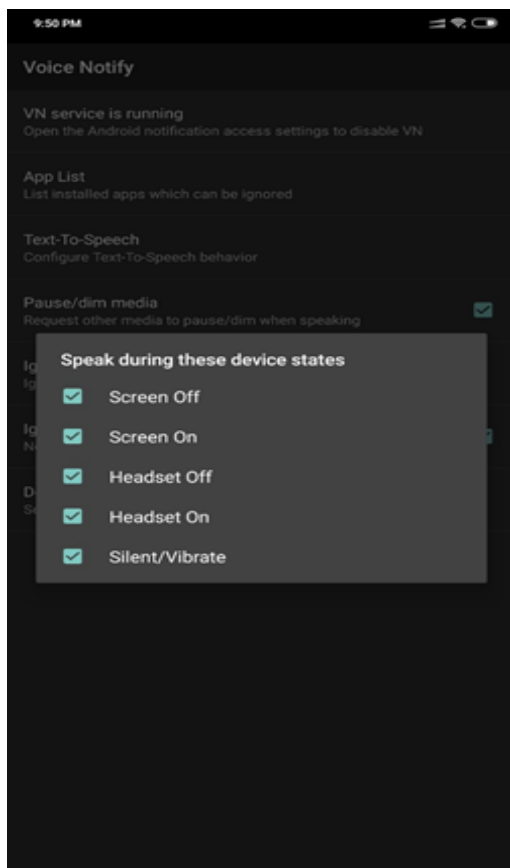


Fig 4:- System Setting

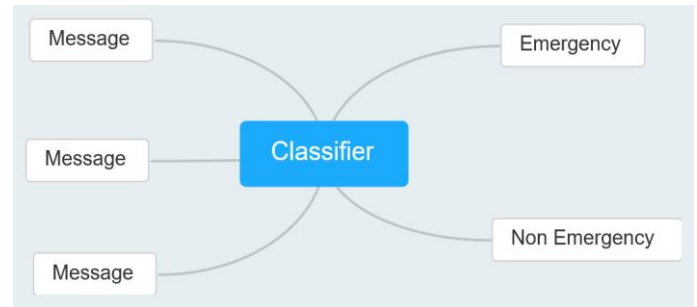


Fig 5:- Notify me Visualization

B. Potential Future Uses

Automatic text classification and categorisation would become a major part of the world of the Internet. The Virtual assistants would be able to classify the text according to the person’s mood and the context specified. In case of an emergency, it could easily detect and contact the nearby help. There are many possible future uses of this technology, from home automation to translation to companionship and support for the elderly. The future voice assistants may be able to feel like a human, emote it’s speech as well as detecting the emotion of the context of the conversation (with the help of notifications) and detect the situation. If in the case of an emergency, it could deliver to the other end of the conversation and reads it out loud.

IV. CONCLUSION

The proposed assistant system has two main parts: an Android application and a backend platform. It provides continuous authentication for voice assistants. The backend is hypothesized that with data preprocessing and a relatively more sophisticated base Naive Bayes model, the results shall be reproduced.

{A computer would deserve to be called intelligent if it could deceive a human into believing that it was human. Alan Turing.}

REFERENCES

- [1]. Schmidhuber, Jürgen. "Deep learning in neural networks: An overview." *Neural networks* 61 (2015): 85-117.
- [2]. Cortes, Corinna, and V. Vapnik. "N, Support Vector Networks." *Machine Learning* 20, no. 3 (1995): 273-295.
- [3]. Hirschberg, Julia, and Christopher D. Manning. "Advances in natural language processing." *Science* 349, no. 6245 (2015): 261-266.
- [4]. Kulhalli, Kshama V., Kotrappa Sirbi, and Mr Abhijit J. Patankar. "Personal assistant with voice recognition intelligence." *International Journal of Engineering Research and Technology* (2017).
- [5]. Hashimoto, Kei, Junichi Yamagishi, William Byrne, Simon King, and Keiichi Tokuda. "An analysis of machine translation and speech synthesis in speech-to-speech translation system." In *2011 IEEE International Conference on Acoustics, Speech and*

- Signal Processing (ICASSP), pp. 5108-5111. IEEE, 2011.
- [6]. Christina, Ruth, Greeshma Liz Shajan, and B. Ankayarkanni. "CART-A Statistical Model for Predicting QoE using Machine Learning in Smartphones." In IOP Conference Series: Materials Science and Engineering, vol. 590, no. 1, p. 012001. IOP Publishing, 2019.
- [7]. Ratna Kaavya, M., Ramya, V., Ramya G. Franklin(2019)," Alert System for Driver's Drowsiness Using Image Processing ", Proceedings - International Conference on Vision Towards Emerging Trends in Communication and Networking, ViTECoN 2019, PP 284-288.
- [8]. Metsis, Vangelis, Ion Androustopoulos, and Georgios Paliouras. "Spam filtering with naive bayes-which naive bayes?." In CEAS, vol. 17, pp. 28-69. 2006.