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Recognition of Potentially Dangerous Selfies in Real Life

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Abstract: ***Capturing and posting the images of a selfie has become an ongoing trend in recent years. Since March 2016, there has been the advent of vulnerable events such as the death of people in large numbers and huge groups were injured while clicking selfies. Researchers have studied selfies for understanding the psychology of the authors and understanding their effect on social media platforms. This research work includes a detailed analysis of the casualties related to selfies, and the reason behind the dreadful incidents is considered. Image type is used to classify a particular selfie as a dangerous of which type. The image types were chosen because they contained detailed information that enabled the prediction. Various methods were implemented on 130 selfies that were annotated were collected from Twitter, giving a 58.65% accuracy overall. The collected images have their background with Water, Animal, and Gun. These have been the key factors by which images were classified using them as dangerous. Four types of Classifiers were used so that the accuracy could be estimated in an optimal manner. The classifier algorithms that have been implemented in this research work are Simple Virtual Machine (SVM), Decision Tree, NaiveBayes, and K Nearest Neighbor (KNN).***

Keywords: Selfies, Dangerous, Twitter, Classifiers, KNN, SVM, Naive Bayes, Decision Tree, Water, Animal, Gun

1. Introduction

The depth of social media posts is increasing day by day, various trends have emerged. Social media trends which were in the past, like social media advertising, memes, any crisis events reporting such as firestorms, and much more, have been deeply studied and analyzed. Another major trend that has evolved over social media in recent years is of posting selfies [1]. According to the Meriam Webster dictionary, a selfie is an image taken by oneself of oneself using a digital camera for sharing on social networks. A selfie is not only a photographic entity that depicts the human feelings transmission as a relationship between the photo taker and the camera [2], but also as a moment of rejoicing that can be shared on social media for a broader population views and expressions. Google has a magnanimous amount of 24 billion selfies in its Google Photos repository uploaded in2016-17 [3]. The selfie trend is popular with the age group of 18 to 33 millennials. Around 55% of selfie-takers have shared their "selfie" on a social media platform, according to Pew research center [4]. "Selfie" was declared 2013 Year Word by the Oxford Dictionary because of its huge popularity [5]. The virality of the selfies caused service havocs for social media platforms. An instance includes the Selfie by Ellen DeGeneres, a popular television host at the Academy Awards, which slowed down the Twitter handle.

2. Impact of Selfies

The concise effect of a specific selfie on contributing to a movement is revolutionary. The authors analyzed Lebanon's teenager death, whose death was a few moments after taking a selfie at a blown-up SUV. Another instance of this trend has affected the physical and self-esteem of women [6]. India has the highest selfie deaths among the remaining countries. Research work still now revolves around psychological attributes [2] of selfies, investigating social protests from selfies, effect on authors who post selfies, dreadful incidents, and selfie demises by implementing computer vision methods for interpreting a given image belongs to the selfie category or not [8]. The trend of capturing selfies represents the expression of self, and the selfie owners upload their adventure selfie images. This trend of selfies has a lot of drawbacks. Selfie deaths in 2016 were more than the Shark attack deaths. There is an unprecedented danger of the trend. Youth claim that social currency [9] for them is the number of likes, comments, and shares they get for their selfies. This social currency compels the youth to take Selfies at risk. Thus, there are many instances where selfies are being more dangerous and lack significant ways to make sure that there are a lot of bad consequences caused by them. This research work analyzes the causes behind the selfie deaths [7] by depending on insights obtained, and thus formulate features that can categorize potentially dangerous selfie images from the others.

3. Literature Review

Over a few years from the past, the culture and trend of sharing selfies on social platforms have been greatly understudy examination. The selfies posted on social platforms have gained popularity have drawn many researchers from various fields to study the unbounded aspects of this trend. Many research has been done on the classification of selfies, among them 'Me, Myself and My Killfie: Characterizing and Preventing Selfie Deaths' [10]. In that paper, they classified posts on social media that is Twitter here into Dangerous and Non-Dangerous. They have considered text, image, and Geo-Location of the posts as the parameters for classification. They have successfully classified with good accuracy. Human annotations and

features from selfie casualties helped in better-learned results. The methodology proposed would help users recognize any situations that are dangerous before capturing a selfie. There is another research on the impact of Selfies on Online social media [11] [12]. They also considered Facebook in their social media. They studied the frequency of the Selfie posts that are posted on social media. Their main study is to analyze the psychological study of the men and women [13]who are posting Selfies on Social media. The work in this project is to classify dangerous selfies into different categories. They are Animal, Water, and Gun-related Selfies. These are one of the main causes of selfie deaths. Water-related selfies contribute to the second-highest number of selfie deaths, whereas animal and gun related remain predominant for the causes of death.

4. Feature Set Generation

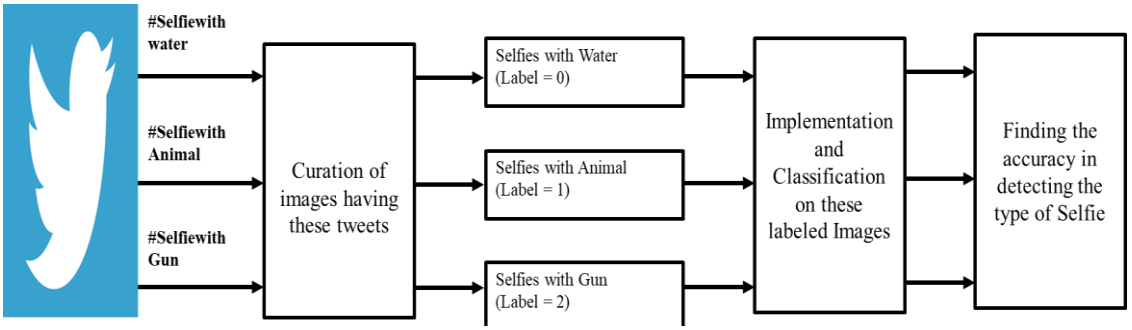
Twitter is used for the collection of images. Twitter is a well-known social media handle that allows access through APIs of their users posted. 'Download Them All' API [14] has been used to collect the images. This has been a very useful tool for curing images.3% sample of the entire dataset is provided by API. We used keywords like #selfie, #selfiewithanimal, #selfiewithwater, etc., for collecting tweets related to selfies. About 700 images are collected using these hashtags. Out of the images collected, which have 220 which have images in them. However, it is unclear if all obtained images were really selfies or not. To retain only the true selfie images, 70 images are manually removed that are not selfies. Only required hash tag tweet images are considered for further analysis. So, 130 images are finally shortlisted. These are selfies with Animals, Guns, and Water. These include 50 selfies with animals, 30 selfies with Gun and 50 with Water.

Figure 1: Man taking Selfie with Gun

Figure 2: Man taking Selfie with Animal

Figure 3: Man taking Selfie inside water

5. Flowchart



Flow Chart: Showing the Methodology

6. Methodology

a) Introduction:

On the Selfies considered, the methods involve the extraction of Selfies with #Selfiewithwater, #SelfiewithAnimal, #SelfiewithGun. For this, images are searched using the hashtag in an API to get the respective images. Then the images are converted into a particular form where these can be used as the parameters of further required classifier.

b) Pre-processing of Images:

After downloading the images from the Twitter, first separation of themis done into three folders where each folder has the same type of selfies corresponding to the same hashtag. Manual sortingof the required images is done by removing the unwanted ones.

c) Converting Images to Arrays:

Considering one folder at one time, the images from them are converted into a NumPy array which is an understandable format for the classifiers. NumPy array conversion is done as the dataset is images, thus extracting pixels from the images. So, the NumPy array is a multidimensional array as every pixel has a corresponding array, so it is important to flatten the array and convert it into a single dimensional array. This is done for all dataset images. Sklearn functions [15]are used for converting them

to arrays.

d) Appending and Labelling:

Two empty lists, say X and Y, are taken, where X is for the arrays which are obtained after flattening, and Y is for the labels. As there are three classes of images, three labels are given (one label to each). The labels are Zero (0) for Water selfies, One (1) for Animal Selfies, and two (2) for Gun selfies for all corresponding images in the dataset. The arrays are appended into list X and labeled into list Y. Then converted into a list because the parameters of the classifiers are of a list type.

e) Training and Testing:

After obtaining the X and Y lists.80% of images are used for training, and the remaining 20% are used for testing. For training setimages corresponding labels will be used to acquire knowledge regarding the nature of the images, so the parameter of the label can be used in comparison for the images after testing. For a testing set that has labels, these are compared with already generated labels, and the accuracy is obtained.

f) Algorithms Used:

Four Algorithms which are the supervised type of classifiers, are used. These are Support Vector Machine (SVM), Decision tree (DT), Naive Bayes (NB), and K nearest neighbor (KNN).

7. Conclusion

	SVM	DT	NB	KNN
Accuracy	38.46	84.61	42.30	69.23

It is found that the Decision tree gave the highest accuracy among other Algorithms with an accuracy of 84.6%.

An optimal accuracy for the classification of Selfies is obtained. More accuracy can be found by using CNN and other latest methods. There are also other reasons for selfie deaths, like height related, geography related. Geolocation can be used in the classification of images where geography is the factor, and for height-related selfies, the relative height in a one-kilometer rangecan be found and rate the danger according to that analysis. With this research, it is hoped thatthis work will be useful for the future, and selfie risks will be reduced.

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