



## Chaitanya Bharathi Institute of Technology

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## CERTIFICATE

This is to certify that the project titled “**Road Accidents Prediction and Classification**” is the bonafide work carried out by **ABRAR ATHAR HASHMI (1601-15-733-082)** and **ABDUL WAHED (1601-15-733-079)**, the students of B.E.(CSE) of Chaitanya Bharathi Institute of Technology, Hyderabad, affiliated to Osmania University, Hyderabad, Telangana(India) during the academic year 2018-19, submitted in partial fulfillment of the requirements for the award of the degree in **Bachelor of Engineering (Computer Science and Engineering )** and that the project has not formed the basis for the award previously of any other degree, diploma, fellowship or any other similar title.

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## **Declaration**

We hereby declare that the research work entitled “**ROAD ACCIDENT PREDICTION AND CLASSIFICATION** ” is original and bonafide work carried out by us as a part of fulfilment for Bachelor of Engineering in Computer Science and Engineering, Chaitanya Bharathi Institute of Technology, Gandipet, Hyderabad, under the guidance of **Prof. N Rama Devi, Department of CSE, CBIT.**



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## Abstract

With the exponentially increasing number of vehicles, road safety is a matter of huge concern. Road accidents kill 1.2 million people every year. In 2017, there have been 2367 accidents with injuries reported in Hyderabad alone. It causes loss of lives and economical damage, due to which is a serious concern which needs to be solved.

We have used Machine Learning algorithms to predict the severity of an accident occurring at a particular location and time. Factors like speed limit, age, weather, vehicle type, light conditions and day of the week have been used as parameters for training the model. We have used the road accident data provided by the government of UK from 2005-2015. The dataset has 1.2 million records of which 80% is used to train the model and 20% to test it. We have chosen Random Forest for our Machine Learning model as it showed the highest accuracy of 86.86%. User data at a specific time will be used to predict the severity of a road accident at the given location. The severity metrics are 1= Fatal, 2= Serious, 3= Slight.

We have used Machine Learning tools such as Python, Scikit-Learn, Numpy, Matplotlib etc. Google colab and Microsoft Azure are the cloud tools used. The OpenWeatherMap Api is used to get the weather and light conditions at a particular time based on the location of user. The TextLocal Api is used to send an sms to the police containing the location coordinates of the user and the accident severity predicted for that location. GeoLocation Api is used to take the GPS coordinates of the user.

We have created a web app for user input and output display and a notification is sent to the police to take preventive measures. The model is trained and tested on Google colab. Since the dataset is very large, we set up a virtual machine on Azure with high Gpu processing power. The front end takes the input from the user and sends it to the backend where the Machine Learning model is deployed. The model will run with the input data and predicts the severity of an accident occurring at the respective location of the user. We have bought a custom domain name for the web app so that it is easily accessible by anyone. We have secured the website with HTTPS for secure transfer of data and to be able to use the GeoLocation API.

This model will play an important role in planning and management of traffic and would help us reduce a lot of road accidents in the future.

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