

## A Survey on Smart City Crime Awareness

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**Abstract**— Present day, cities are not restricted to only constructions and physical infrastructures. They are embracing knowledge based system extending from sensor networks to public databases. Big data is a very valuable resource to make cities extra advanced, intellectual, and unified. Cities are responsible for maintaining a safe and secure place for the public. Big data and technologies are revolutionizing how cities can locate, mitigate and prevent safety issues. This Project involves design and implementation of an application based interface for the Crime Dataset of the city. The application will help public as well as researchers to find safe and habitable locations in development of Smart cities.

**Keywords-** Smart City Project, Challenges, Assessment

### I. INTRODUCTION

The journey toward becoming a ‘smart’, each city will require an exclusive approach, and hence will prefer partners who have deeper understanding of Indian issues and can provide localized solutions using global best practices. Through the ambitious ‘Smart Cities mission’ Government of India is looking to induct newer and integrated technologies to address these challenges, and improve the quality of life of citizens. The key elements selected under the mission are Transportation, Energy, Water management, Environment, Smart Governance, Citizen Participation, Digitization, Public safety, Housing, Education and Healthcare. Along with the all needs of human being the most important factor that comes in picture is safety [1]. As the population is going to increase crime rate will also going to rise and it is not possible for the police to control the crime rate effectively. So working on smart city the safety will be the most important factor. It has been observed that Crime events are directly and indirectly dependent on some circumstances and scenarios [2-17]. For example, studies show that the ratio of crime incidents in summer is more than the crime events occurring in winter. Similarly, there are other factors like pollution, temperature, food availability and education which have effects on crime events.

### II. PROBLEM DEFINITION:

Through my paper I will be focusing on few public queries and safety issues:

1. Go out: for given date time and location, my application will help user to alert about the possible

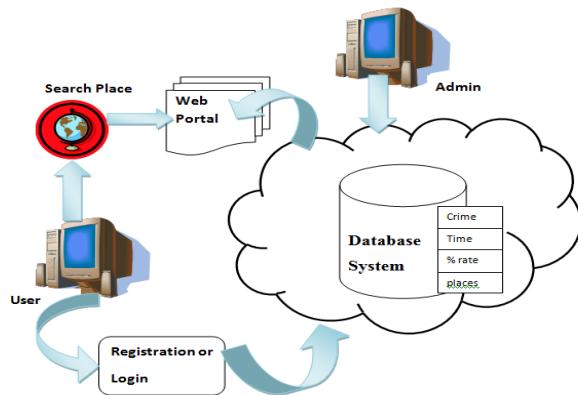
- crime activities, safe passages, nearby police detail and emergency safety procedures[18]
2. Police patrolling: This application will give alerts of possible crime events and will help police to keep track of incidents. Officers can learn how to spot trends anticipating where crimes may occur and can ensure the right resources are in the right places, to make city safer [19]. Police can do proactive patrol planning in the promising locations to avoid these kinds of events in future
3. Parking: For given location and time it will predict the safety percentages of vehicle and will give warning for safety alert [4]
4. Stores and market: It will give alert of forgery, bogus checks or credit card theft based on locations. Based on time and location it will also give alert notification for any robbery or narcotics activity \*
5. Safe Passage: Based on area and camera violations, my application will provide safe passage for the users in critical situations.

### III. PROPOSED METHODOLOGY:

- The main aim of this project is to design an application and interface which will work as a Data mart accessible to all [5].
- Proposed application is new and original development as the data analysis will be built on datasets Crime, Police, Food availability and Temperature.

- This application would be useful for researchers, organizations and public to locate safe and sustainable habitat [8].
- The application will protect cities against crime and terrorism.
- Based on temperature change, food availability and police support; the application will help in monitoring public areas, analysing patterns, tracking incidents and suspects, enabling quicker response.
- Using the application users can explore on crime data for given issues and conditions.

#### IV. SYSTEM ARCHITECTURE:



#### Module Description:

**User Module:** In this module user can do the registration on website and access it by using his/her credentials. User can view the all the prediction related to the area and criminal activity. User will know which area is considered as safe [19].

**Data Mining Module:** To implement this we did the data mining operations on the data. The data is structured format and which is easy to maintain relations in data entity to show the relationship of different parameters [20].

**Prediction Module:** The actual core part comes in this module. System gives prediction to user according his/her basic information and area related crime. The Prediction of safety is varies according to area and user information [21].

**Graphical Statistics Module:** In this module system provides the statistics of all the prediction and related activity in that area. Graphical statistics comes with Pie chart and Bar graph.

#### V. ALGORITHM:

##### What does it do?

K-means creates k groups from a set of objects so that the members of a group are more similar. It's a popular cluster analysis technique for exploring a dataset. Cluster analysis is a family of algorithms designed to form groups such that the group members are more similar versus non-group members. Clusters and groups are synonymous in the world of cluster analysis.

How does k-means take care of the rest?

K-means has lots of variations to optimize for certain types of data. At a high level, they all do something like this:

1. K-means picks points in multi-dimensional space to represent each of the k clusters. These are called centroids.
2. Every patient will be closest to 1 of these k centroids. They hopefully won't all be closest to the same one, so they'll form a cluster around their nearest centroid.
3. What we have are k clusters, and each patient is now a member of a cluster.
4. K-means then finds the center for each of the k clusters based on its cluster members (yep, using the patient vectors!).
5. This center becomes the new centroid for the cluster.
6. Since the centroid is in a different place now, patients might now be closer to other centroids. In other words, they may change cluster membership.
7. Steps 2-6 are repeated until the centroids no longer change and the cluster memberships stabilize. This is called convergence.

It depends, but most would classify k-means as unsupervised. Other than specifying the number of clusters, k-means "learns" the clusters on its own without any information about which cluster an observation belongs to. K-means can be semi-supervised.

##### Why use k-means?

I don't think many will have an issue with this: The key selling point of k-means is its simplicity. Its simplicity means it's generally faster and more efficient than other algorithms, especially over large datasets.

It gets better: k-means can be used to pre-cluster a massive dataset followed by a more expensive cluster analysis on the sub-clusters. K-means can also be used to rapidly "play" with k and explore whether there are overlooked patterns or relationships in the dataset [9] [10].

It's not all smooth sailing: Two key weaknesses of k-means are its sensitivity to outliers, and its sensitivity to the initial choice of centroids. One final thing to keep in mind is k-

means is designed to operate on continuous data — you'll need to do some tricks to get it to work on discrete data.

## VI. REQUIREMENT ANALYSIS:

Requirement analysis bridges the gap between system engineering and software analysis design. Software requirement analysis involves requirement collection, classification, structuring, prioritizing and validation. Requirement analysis consists of user requirements Analysis is concerned with understanding and modelling the application and domain within which it operates [11]. The initial input to the analysis phase is problem statement, which describes the problem to be solved, and provides a conceptual view of the proposed system.

### Functional Requirement:

Functional requirements for the system describe the functionality or services that should be provided by system functions in detail, its input and output expectation. Now a day for every mega city safety becomes the most important factor. So there is a need of an effective solution through which we can control the crime and can suggest the citizen the safer place for them to live their safe life [6][14].

### Non Functional Requirement:

This section describes constraints on the system under development such as Usability, Portability etc. In our project following is considered.

## VII. EXPECTED RESULT:

The main aim of this project is to design an application and interface which will work as a Data mart accessible to all.

- Proposed application is new and original development as the data analysis will be built on datasets Crime, Police, Food availability and Temperature.
- This application would be useful for researchers, organizations and public to locate safe and sustainable habitat.
- The application will protect cities against crime and terrorism.
- Based on temperature change, food availability and police support; the application will help in monitoring public areas, analysing patterns, tracking incidents and suspects, enabling quicker response.
- Using the application users can explore on crime data for given issues and conditions.

## VIII. CONCLUSION:

After completion of this project we will be able to provide a most effective platform to the citizen for their safety. Which will go to help then to have a safe and crime free lifestyle? Also this system will help our security system to keep watch

on the citizen's movement and to take quick action against the crimes happening in the city. And we have to be concluding that, this application would be useful for researchers, organizations and public to locate safe and sustainable habitat. We will protect cities against crime and terrorism [11] [13].

Based on temperature change, food availability and police support; the application will help in monitoring public areas, analysing patterns, tracking incidents and suspects, enabling quicker response so that, using the application users can explore on crime data for given issues and conditions

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