Abstract — The criminal behavior is a disorderliness that is a combined result of social and economic aspects. The crime rate has expanded and the activities of criminals have broaden in last few decades due to better communication system and transport. Crimes cause terror and damage our community enormously in several means. In cities and towns the crime trends rise due to fast developmental activities and increase in population. In India, the regional location has a powerful impact on criminal activity. The CrimeInfo report of National Crime Records Bureau (NCRB), India collects, analyze and publish the crime data. The crime profiling and zoning can be modeled with utilization of data mining. In this paper, we make cluster analysis by using k-means cluster algorithm on criminal dataset of India. The cluster input is used to create custom India map with the cluster zones of states. The custom maps displays an overall crime profiles of states which helps police and law enforcement department to take additional preventive measures to combat against the crime and plan advanced investigation strategies. The crime trend and zoning knowledge can also be helpful in cautioning police to increments and reductions in levels of actions.

Keywords — Data mining, crime profiling, clustering, k-means

I. INTRODUCTION

In current era, criminals have maximal utilization of all modernized innovations and novel practices in perpetrating the crimes. Worldwide top priority is given by all government departments towards security and curtails the crime occurrence. A crime trend is a continuous, long-term rise or fall in temporally-based information. The crime records assumptions a critical part in the planning of police working for control and discovery of crime. The Indian Police, throughout the years, have tried to enhance the proficiency of the crime records systems to perform their duties with higher productivity and adequacy. The automation of criminal records and the Police Computer Network system has delivers huge criminal information. The National Crime Records Bureau NCRB [1], home affairs ministry, India collects & maintains criminal data and publish reports of crime statistics documents. The crime data could be analyzed to interpret the emerging crime trends at high quality both locally and nationally.

The police department, crime researchers, criminologists and judicial officials in India use NCRBs vast statistical data to analyze and help curbing the crime. To execute crime analysis from huge criminal data, an appropriate scientific field needs to choose. Data mining introduce drilling or deriving knowledge from historical huge database. Crime analysis is an attractive area where data mining shows a vital role in terms of investigation and forecasting. But the challenges to analyze the crime profiles and policing strategies is becoming more severe as the crime rate is rising day by day. In this research, we use data mining strategies on huge criminal dataset and knowledge gained is valuable and helps police department.

In this paper we use cluster technique of k-means algorithm on criminal dataset of India for crime analysis. The crime dataset is developed by applying complex query on the CrimeInfo India database [1]. The crime dataset is inputted into WEKA software to construct cluster zones based on k means clustering method. The cluster technique builds a model of states with high, medium and low crime zones. The cluster output of WEKA is passed manually as input to MyCustom map [2], an online interactive map tool of maps of India to create custom India map with the cluster zones of states. The custom maps displays an overall crime profiles of states which helps police and law enforcement department to take additional preventive measures to combat against crime and plan advanced investigation strategies. The crime trend and zoning knowledge can also be helpful in cautioning police to increments and reductions in levels of preventive actions.

II. BACKGROUND

The duty of criminal investigators at police departments all over the world is to identify and make tactical analysis of crime trends and patterns [3]. This analysis helps police to control the crime and enhance the safety of communities. In India NCRB [1] maintains the crime data and statistical publications software for analysis of crime info.

Shiva Prasad [4] discussed a short review of several Data Mining Techniques. An efficient comparing of various techniques of classification, especially Genetic Algorithm, K-Nearest Neighbor (kNN) and Support Vector Machines (SVM) of data mining was made to correlate the effects of the classification rules from data [5]. Data mining can be used to model crime profiling. Zakir Hussain, et al. [6] presented criminal behavior investigation by using data mining methods. The study elaborated the criminal behavior analysis of the offenders by using data mining approaches.