USING DATA MINING TECHNIQUES TO ANALYZE CRIME PATTERNS OF NATIONAL CRIME DATA

Samantha Kumarapathirana 1, Saminda Premaratne 2

1 University of Ruhuna

2 University of Moratuwa

suman.kumarapathirana@gmail.com

The concern about national security of citizens of any country has increased significantly during the last three decades. And this issue is continuing to grow in intensity and complexity. Crime is an offence against a person, or his/her property or the State regulation and occurs in a variety of forms. These forms have been recognized internationally as traffic violations, sex crime, theft, fraud, etc. Criminology is an area that focuses the scientific study of crime and criminal behavior and law enforcement and the process aims to identify crime characteristics. A crime analysis tool analyzes and summarizes collected data, identifies the patterns of happening crimes quickly and predicts for future crimes using the patterns generated. High volume of crime datasets and also the complexity of relationships between these data have made criminology an appropriate field for applying data mining techniques where important results can be gained providing betterment for the society. Many classic data mining technique s have been successful for crime analysis generally, such as association rule mining, classification, and clustering. The purpose of this survey is to summarize major findings in mining of crime data and to review the applicability of various data mining methods and Geographic Information Systems in crime analysis and visualization. The Regional Crime Analysis Program uses data mining and data fusion techniques in order to catch professional criminals. Another framework for crime trends uses a new distance measure for comparing all individuals based on their profiles and then clustering them accordingly. This method also provides a visual clustering of criminal careers and identification of classes of criminals. Exploratory Data Analysis techniques are interactive and visual, and there are many effective graphical display methods for relatively small data sets. Spatial point patterns (SPP) are based on coordinates of locations of crime incidences and is typically interpreted as analysis of clustering. Since crime data is increasing to very large quantities, in turn the need for advanced and efficient techniques for analysis is increasing. Data mining as an analysis and knowledge discovery tool has immense potential for crime data analysis. This field is not mature and needs further investigations.