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SECURED POLICE CRIME BREAKDOWN INFORMATION SYSTEM

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***Abstract*—Application based police accessible information system is a service related to e-government. It improves communication between police department. By providing access through online the society in efficient and cost-effective way and it provides professional efficiency for police administration. This system will allow law keepers to involve more for decreasing crime rate. In this project a detailed explanation of web & android based police accessible information system is given. Information system allowing police to view registered case information through online and helps to police department to do actions based upon the FIR. This system is totally computerized information system and provides facility to get access data to registered users and police department. This system helps higher authority to know the status of complaints and to analyze the data easily. Using our system other station authority can able to easily view previous crime history. Based on the stored records the current crime case and related crime mystery/situation can be solved. Our system helps in crime scene based on existing crime information such as crime motive, solving and identifying pattern of the crime etc. We also applied classification and prediction in this project. By this concern police staff can easily come to a decision about the incident and their relationship for the scène.**

Keywords—Crime,Pattern Detection,E-Government, Data Mining-Classification, Prediction.

INTRODUCTION

An information system (IS) is an organized system for the collection, organization, storage and communication of information. More specifically, it is the study of complementary networks that people and organizations use to collect, filters, and process, create and distribute data. "An information system (IS) is a group of components that interact to produce information. It focuses on the internal rather than the external." The Police need reliable and relevant information in order to make correct decisions both tactically and legally. Therefore, it is natural for the officers to gather as much information as possible. When they are standing in the middle of a situation, information and knowledge are their weapons. During assignments there are needs for a specific type of decision support. This is information about addresses, criminals or vehicles that are stored in the police information systems.

Information about what has happened earlier at a specific location could be of vital importance for the police officers to choose the right tactical approach. In police practice the dispatch centre supports police officers with information, when they are out on duty. The above-mentioned active information search performed by police officers also aims to increase knowledge for enabling a decision making support. Police officers are aware of how quickly a situation can appear and, therefore, information can be part of a successful solution.

Data mining

Data mining is the process of extracting data from the data set. It involves machine learning, statistics, and database systems. The main goal of DM is to extract information from a data set and transform it into an understandable structure.

The knowledge discovery in databases (KDD) processes is of five stages: they are Selection, Pre-processing, Transformation, Data mining, Interpretation/evaluation.

Pre-processing

Before data mining algorithms can be used, a target data set must be assembled. As data mining can only uncover patterns actually present in the data, the target data set must be large enough to contain these patterns while remaining concise enough to be mined within an acceptable time limit. A common source for data is a data mart or data warehouse. Pre-processing is essential to analyze the multivariate data sets before data mining. The target set is then cleaned. Data cleaning removes the observations containing noise and those with missing data.

Data mining:

Data mining involves six common classes of tasks:

Anomaly detection (outlier/change/deviation detection) – The identification of unusual data records, that might be interesting or data errors that require further investigation.

Association rule learning (dependency modeling) – Searches for relationships between variables. For example, a supermarket might gather data on customer purchasing habits. Using association rule learning, the supermarket can determine which products are frequently bought together and use this information for marketing purposes. This is sometimes referred to as market basket analysis.

Clustering – It groups and structures the data that are in some way or another "similar", without using known structures in the data.

Classification – is the task of generalizing known structure to apply to new data. For example, an e-mail program might attempt to classify an e-mail as "legitimate" or as "spam"

Regression – It is to find a function which models the data with the least error that is, for estimating the relationships among data or datasets.

Summarization –is providing a more compact representation of the data set, including visualization and report generation.

About the Project

Along with social economy's rapidly expand, the public security faced with day by day stern and the brand-new challenge, traditional security mechanisms have found it hard to complete the means to effectively guarantee public security. In limited of police circumstances, how to use high-tech measures to effectively analyze the situation of police intelligence, improve crime crackdown public security departments are the first thing to consider it [1].Recent years have witnessed the “Golden Shield Project” strongly promoted, and dozens of databases system have been established, including the urban resident population, temporary residents, hotel accommodation criminal population. The database system has accumulated a large number of business data which have become an important source of security intelligence data[2].With the help of technologies such as data warehouse, data mining and knowledge discovery, traditional intelligent analysis can get valuable information from massive data resource to make decisions. It make intelligent analysis of policing information became a realistic plan and promote modern policing towards intelligence-led [2]. It is used for the collection, storage, management, analysis and expression of spatial data information system, it provides a sense, different from the traditional method of information processing.

DESIGN OF THE SYSTEM

The system is divided into the data layer, operating platform, service layer and application layer. Data layers, including the police basis geographic information, the police public geographic information, business-specific geographic information, as well as real image database, the use of large databases store a variety of resources. Operating platform is provided by the secondary development of large-scale GIS(Geographic Information System) [3] framework and component technologies, as well as video surveillance platform. Map layer services, including access, location information, thematic analysis and so on. The application layer included decision-making services, as well as support for the various functions of the system implementation. Related GIS platform provides the interface for connecting the data layer and service layer, and the function of conversion. The system structure is shown in

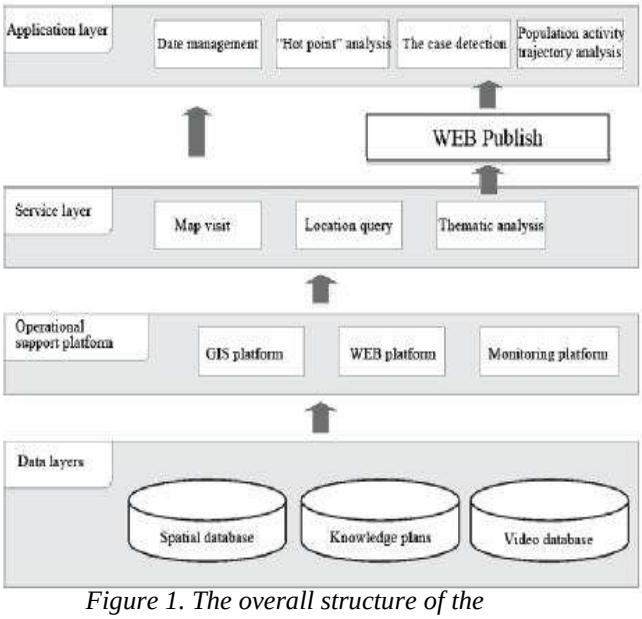


Figure 1. The overall structure of the system Main function of the system

Association rules in crime "hot spot" analysis[6] : First of all, police officers should analyse and determine the impact of

" where the high concentration of crime is", and use association rule mining technology to identify the relationship between information, and to determine which crimes information should also focus on, and provide effective support. We have calculated the high crime area in accordance with the distribution point the way. If "Hot spots" once identified, the region can be defined as the focus of recent patrol activity goals.

The case detection : Crime database has restored many fragmented data, if the data just only stored in the database, then it is difficult to acknowledge the criminal information and be used by detection staff. The association rules data mining is one of the most important technologies. Some cases usually allow investigators extremely headache, because of the limit available descriptive clues about the case. However, by the incident and record the location of the perpetrators have associated with previous criminal information database information, we can generate a list of suspects contains possible. Investigators can use the description of any known factors, and focus on the scene to further narrow the scope of the regional scope of its investigation. The screening of the final list, it can become a member of the investigation carried out to detect the starting point[6]. In addition, GIS can be used to determine the same consecutive series of cases occur in space followed by the order of occurrence, as well as the incident at the distribution of space

OBJECTIVE OF THE STUDY

1. Dealing only with administrative tasks. The administrative task is a part of police main business.
2. The use of police intelligence in police department which are inter-connected.
3. Every document concerning criminal investigations manages by this system.
4. Communication and life-long learning in police practice.

SCOPE OF THE STUDY

Information technology use aims to increase the efficiency of police work. The police department has several computer-based information systems, and several of those information systems have become a necessary tool for police work. Some information systems manage records and their contents should be preserved long-term. When new information related to crime and investigation are developed the system is presented to the DB Archive which decides if the contents of the system are to be preserved. Long-term preservation means that the contents of the system are so valuable for the police that it must be preserved forever. This is helping other state police department to analysis with are correlating to their crime case and come to an decision regarding suspects/Crime Pattern etc

PROPOSED WORK

- The police have a computer network and every police station has PCs connected to this network.
- Those terminals are only connected to the police network and not to the Internet.
- The majority of the systems accessible on the network are national. All national police systems can be accessed from every network connected work terminal.
- The access is secured with a public key (PK), where each officer is given personal authority for access to systems necessary for his or her work.
- Each police officer has a personal Pin/OTP, with information needed to verify the officer's rights of access to the police information systems.
- Information from the Pin/OTP is sent to concern police via e-mail. Then each terminal verifies the right of access.
- Every action taken by an officer within the police information systems is logged in separate log files, to ensure proof if the information systems have been misused. Police information systems are designed to make information available and to make police work more efficient and to manage records.
- All information systems are designed with some database solution, enabling quite advanced search functionality.
- Police officers not only retrieve and gather information actively, they also get information through automated communication processes.

Use of record in two dimensions

The use of electronic records in two dimensions: Decision making for situated action, Decision making for planned action.

A. Decision making for situated action

'Situated action' refers to situations where police officers are on a specific assignment, irrespective of how it was assigned. In these situations information could be vital for making correct decisions and judgments. The officers use information from electronic records as one of their information sources.

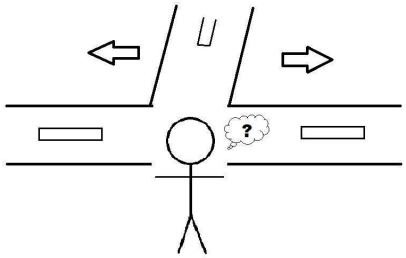
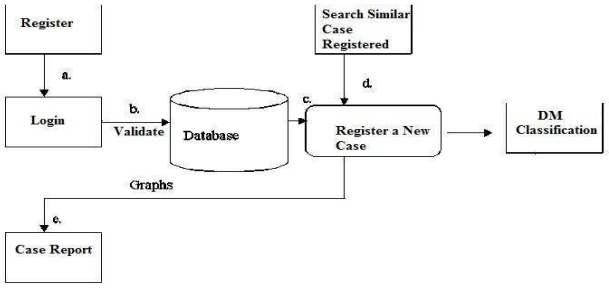


Figure1.1Decision Making for Situated Action

B. Decision making for planned action

In the police officers have no planned action time to gather authentic and trustworthy information. In these situations almost every police information system is used.

SYSTEM ARCHITECTURE



The user must register with proper details such as name, username, password, mail id, designation, etc. The user has to login with credentials. Then the system verifies with the use of database. They can register a new case file such us FIR or search for registered case details. The case details are searched with keywords such as crime type, crime gang, weapon used, criminal name etc. The action report is generated in the form of charts by analyzing the crime action reports. From the report, whether the crime rate increased or decreased is found.

Building the Classifier or Model

This model is the learning step or the learning phase. Here the classification algorithms build the classifier. The classifier is built from the training set made up of database tuples and their associated class labels. Each tuple that constitutes the training set is referred to as a category or class. These tuples can also be referred to as sample, object or data points.

Using Classifier for Classification

In this step, the classifier is used for classification. Here the test data is used to estimate the accuracy of classification rules. The classification rules can be applied to the new data tuples if the accuracy is considered acceptable.

Classification and Prediction Issues

The major issue is preparing the data for Classification and Prediction. Preparing the data involves the following activities [4]

Data Cleaning − Data cleaning involves removing the noise and treatment of missing values. The noise is removed by applying smoothing techniques and the problem of missing values is solved by replacing a missing value with most commonly occurring value for that attribute.

Relevance Analysis − Database may also have the irrelevant attributes. Correlation analysis is used to know whether any two given attributes are related.

Data Transformation and reduction − The data can be transformed by any of the following methods.

Normalization − The data is transformed using normalization. Normalization involves scaling all values for given attribute in order to make them fall within a small specified range. Normalization is used when in the learning step, the neural networks or the methods involving measurements are used.

Generalization − The data can also be transformed by generalizing it to the higher concept. For this purpose, we can use the concept hierarchies.

Using the datamining classification and prediction technique we can generate a case study of crime and its motive.

CONCLUSION

This paper showed how to use huge policing data, how to use data mining technology to get useful information from plenty resource and get statistical reports, analyze where crime happen frequently. Take advantage of spatial analysis functions to establish variety information analysis modules to provide timely and accurate data analysis information to all levels of police stations. The result of the research showed that policeman can get higher quality data which help those making decisions and increase their respond to deal with complex emergencies quickly. Through the network to solve the traditional delayed analysis to ensure that the analysis of the data can reflect the situation of police intelligence. It will be rapid, objective, accurate, flexible to display dynamic security information and easy to find out the rules and characteristics of cases, to combat and prevent the provision of technical support and decisions making basis. It was beneficial to reduce the day-to-day grassroots police statistics and improve the degree of accuracy and sharing.

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