

Analysis and Prediction of Crimes by Neural Networks

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Abstract - This article is dedicated to an audit and points of view of utilizing information mining techniques in crafted by criminal investigators in the national police by the way toward creating and actualizing proactive police exercises for the counteraction and examination violations. It likewise portrays information digging instruments for improving the adequacy of data systematic work of the law-requirement organizations through the production of computerized smart innovative devices. The usable piece of the article plots the fundamental standards, models and innovations that particular programming is utilized to help the scientific work of criminal experts.

Key Words: information mining, information digging instruments, criminal investigators, proactive police exercises, criminal experts

1. INTRODUCTION

Criminal analysis is a consistent complex processing and detection of the interrelations between any criminal significant data and other data potentially significant for police, judicial and criminalistics practice as well as understanding of the essence of such interrelations. Criminal investigation depends on knowledge (lawful) and open data.. It includes the analysis of crimes and criminals, crime victims, disorder, traffic accidents, and internal police operations.

Depending on a task and the end user of the analytical methodology of data mining (all possible methods of classification, modelling and prediction: decision trees, neural networks, fuzzy logic, etc.), as well as partially on statistical methods (correlation analysis, regression analysis, time series analysis, link analysis).

An analyst should study, as far as possible, all available information, and then, based solely on the facts, put forward hypotheses, make predictions and estimates. The hypothesis put forward by criminal analyst gives a theoretical premise that needs to be checked in order to see if it is correct. In particular,

they should consider the following aspects of criminal activity: who is involved: after the formation of a list of persons and organizations, for one reason or another participating in the event or process, the relationship scheme with the weight coefficients of the relationship is modelled; what and how these persons do: a description of events (processes) is subjected to classification and clustering in order to form formalized models of the participants' behavioural profile; where and when everything happens or will happen: the analysis of time series in combination with geographical analysis makes it possible to construct a mathematical model of the observed phenomenon not only for the purpose of forecasting the development of the situation but also for verifying and justifying the hypotheses and versions developed during the investigation; why participants act in one way or another: on the basis of the formed behavioural profile of the participant (organization), not only the evidence base is formed, but also the justification of motivation.

Police activity of law enforcement agencies when conducting investigative activities is based on a wide range of initial data. The event (crime), which will be subject to analytical manipulation, often has three components: spatial, temporal and descriptive. Therefore, the analysis of the event will be spatio-temporal in nature.

2. EXISTING SYSTEM

Every single criminal record are put away in a document. To include any new, record document is utilized. When other police headquarters require any criminal data around then they have to call the police headquarters. There are numerous disadvantages like tedious, require more labor .resident can't get the data and the current status of the violations everything being equal.

3. PROPOSED SYSTEM

The fight against crime requires law enforcement agencies to find new approaches to the collection, analysis and evaluation of intelligence. Intelligence-led Policing (ILP) is a model of a proactive policing activity that uses gathered data and knowledge as a fundamental basis for informed decision-making. ILP is based on a comprehensive criminal analysis of a current situation and aims at the effective use of available forces and means of law enforcement agencies.

4. METHODOLOGY

At the present stage of development of information and analytical technologies, a clear realization has occurred that the tools of the criminal analysis, search, link building, behavioral profile analysis and other analytical techniques, must constitute a single whole system, providing an analyst with a full range of solutions needed for construction of cause-effect relationships. We will consider the possibility of constructing the corresponding software using the example of Real-time Intelligence crime analytics system (RICAS) is the first intelligent criminal data analysis system that has joined in single visual space the fundamental and most developed techniques for criminal investigation, including strategies for scientific hunt, which is very important for the possibility of crime investigation both in hot pursuit, and unsolved crimes of the past.

The framework actualizes components of fundamental criminal examination that permit the accompanying kinds of examination: Crime Pattern Analysis, General Analysis, Methods Analysis, Case Analysis, Comparative Analysis, Offender Group Analysis, Explicit Profile Analysis, and Investigation Analysis. Using every one of these sorts of examination necessarily, it gets conceivable to see the entire picture - predicatively and post factum. As the system is a superstructure over existing databases, it can display explicitly specified links between individuals, as well as build visual connections between persons who at the first glance, are not related to each other. The system uses several algorithms to find links.

The first algorithm is a Recursive Search for relationships on persons who participated in different events. The second algorithm is the Visual Search for links. During the time spent yielding organized data into the visual presentation condition, joins "place of

accomplishment-accomplice-criminal", "crime-suspect accomplices" become obvious. Due to the fact that user directly works with data presented in the form of visual objects, which he can view from different sides and from all angles, he can get additional information that will help him formulate new research goals or significantly delve into the subject of current ones. In this case, the hypotheses, in the future, are easily checked by automatic instruments (methods of stat analysis or Data Mining).

Likewise, direct contribution of the examiner in visual examination has two fundamental favorable circumstances over programmed techniques:

- 1) Visual analysis makes it easy to work with heterogeneous and noisy data, while not all automatic methods can work with such data and give satisfactory results;
- 2) Visual examination is natural and doesn't require complex numerical or measurable calculations.

Also, the system includes a powerful core for working with semantics. Analysis of unstructured data takes place in real time. To unify search functions and build a behavioral profile, an algorithm for automated classification or "tagging" is used.

All events related to the person and his accomplices are analyzed, which makes it possible to analyze group criminality in various directions, and leads to an analysis of the behavioral profile of the group. The semantic core of the system allows you to build complex search queries, including all possible dynamic and static components - time limits, a method of committing a crime, dislocation, etc. All functions are performed instantly and allow you to visualize information and conduct analytical work quickly.

The system includes Visual Temporal Analysis. A display of the chronology of the occurred events and time delimitation allows us to reveal hidden spatial-temporal patterns between different events promptly.

4.1 The Principle of Behavioral Profiling

The most constant and accurate, in terms of the psychology of an offender, is his behavioral profile. It displays many parameters of a criminal activity - a usual way of committing a crime, places of committal and other minor dependencies which in aggregate correspond only to a single profile. Presence of certain behavioral traits, with a certain degree of probability,

may indicate that the subject might be involved in the event. Using this principle allows you to perform Group Behavioral Analysis.

4.2 The Principle of Finding Hidden Patterns

Hidden patterns with a high degree of probability can always identify a link between a perpetrator and all the crimes committed by him. Certainly, some events can "stand out" of the general flow because of their spontaneity or external factors. However, based on the previous principle, such manifestations can be leveled. In RICAS, the search for hidden patterns is carried out based on the intellectual core of semantics processing. Semantic analysis is fundamental, because connections are not always constructed explicitly and they should be sought in context.

4.3 The Principle of Semantic Integrity

Often, all events and behavioral profiles of criminals are described verbally. Therefore, the intelligent module for semantics processing is fundamental. It reveals the wide possibilities for analysis of hidden regularities and contextual search. Undoubtedly, starting from a variety of computer "handwriting", the module is calibrated with a variety of dictionary correspondences.

4.4 The Principle of Visual Analysis

Settling on a choice by an examiner is major in RICAS accordingly, the visual segment is significant. All links between subjects and objects are displayed visually and on a geo-information substrate, with classification attributes and analytical data taken into account.

4.5 Multiplatform and simplicity

The system was developed using modern, optimized technologies in the web space. It can be used on any stationary and mobile devices in the presence of a secure communication channel.

5. FUTURE WORK

In future the hypotheses are easily checked by automatic instruments. From the empowering results, we accept that wrongdoing information mining has a promising future for expanding the viability and effectiveness of criminal and insight investigation. Visual and instinctive crook and insight examination strategies can be produced for wrongdoing design. As we have applied grouping method of information

digging for wrongdoing examination we can likewise perform different strategies of information mining, for example, arrangement. Additionally we can perform examination on different dataset, for example, venture review dataset, neediness dataset, help, adequacy dataset and so forth.

6. CONCLUSIONS

The proposed model for building software based on principles that correspond to the problematics of criminal analysis is not exhaustive and undoubtedly requires further introduction of Data Mining automated methods. The given case of down to earth execution looking through calculation shows the viability of such procedure.

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