International Journal of Research Publication and Reviews

Criminal Investigation Tracker with Suspect Prediction

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ABSTRACT

The CRIMINAL INVESTIGATION TRACKER WITH SUSPECT PREDICTION predictsprimary suspects. The system is proposed to help agencies like CBI, CID and other such bureaus to speed up investigation process and track status of multiple cases at a time. The system keeps logs of a case which includes case summary, people involved, disputes, past criminal history of those involved, Items recovered on scene and other details. The system realizes the type of case, allows admin to update the status of investigation, upload more images of crime, items found on scene etc. This allows authorized officers to check case status and look into its status online and also update any important info as and when needed. The system also consists of a suspect prediction , case prediction, fingerprint prediction algorithms. Based on type of case, modus operandi, possessions, accessories or other entities involved, the system studies the past criminal records of those involved in similar activities and based on this data it provides suggestions of suspects in a logical order. The system can also aid officers to criminals from fingerprint gathered from the scene of action. The system is designed to aid investigation teams to work collectively on cases, coordinate and also speed up the process by suggesting logical suspects based on data provided.

Keywords : Datamining, Fuzzy Algorithm, Hashing Algorithm, Fingerprint Hashing Algorithm.

I. INTRODUCTION

The Project entitled "CRIMINAL INVESTIGATION TRACKER WITH SUSPECT PREDICTION" aimed to detect suspects and criminals which will help the investigation department to get information about the similar cases or crimes with same modus operandi. Nowadays, crime rates are increasing day by day. Especially, robberies and serial killings have become more common these days. This system helps to find the culprits or suspects that can give a lead to the investigation from their track record. The crime and investigation records of culprits and suspects are maintained with limited details and most of the data are stored as hardcopy case files. The status of investigation or the suspects remain hidden from common people. Here we use a process to identify the culprits ,suspects, similar cases and can make a lead in investigation or even take advices from ex-convicts. In this system, we are implementing fuzzy algorithm to identify each culprit or suspect and hence can get all the status and trackhistory of the person. The system is supported to add fingerprints of the criminals this will help to predict the suspect if any fingerprint is found from the crime scene.

In addition to this we also implement a hashing algorithm which will helps in encrypting the data because of it's confidentiality Th system will have an administrative wing which will be handled by the bureaus like Crime Branch,CBI,etc.The user as Officer will have some privileges deployed as they are designated government employees of investigation departments. Then User section will be open for the common people to make complaint or report issues, in addition check the status of a case under investigation, people gone missing etc will be there.

II..BACKGROUND

Technologies used in this project:

•**Hibernate ORM**(or simply Hibernate))is an item social planning apparatus for the Java programming language. It gives a structure to planning an article arranged area model to a social data set. Sleep handles object–social impedance confound issues by supplanting immediate, determined data set gets to with undeniable level item taking care of capacities. Rest is free programming that is conveyed under the GNU Lesser General Public License 2.1.Hibernate's essential element is planning from Java classes to data set tables, and planning from Java information types to SQL information types. Rest additionally gives information question and recovery offices. It creates SQL calls and eases the engineer from the manual dealing with and object transformation of the outcome set.[1]

•**phpMyAdmin**is a free and open source organization instrument for MySQL and MariaDB. As a convenient web application composed basically in PHP, it has become one of the most famous MySQL organization apparatuses, particularly for web facilitating administrations. Tobias Ratschiller, then, at that point, an IT advisor and later author of the product organization Maguma, began to deal with a PHP-based web front-finish to MySQL in 1998, enlivened by MySQL-Webadmin. He surrendered the undertaking (and phpAdsNew, of which he was additionally the first creator) in 2000 due to absence of time. To facilitate the developing number of patches, a gathering of three designers (Olivier Müller,Marc Delisle and Loïc Chapeaux) enrolled The phpMyAdmin Project at SourceForge and assumed control over the advancement in 2001.In July 2015, the fundamental site and the

downloads left SourceForge and moved to a substance conveyance organization. Simultaneously, the deliveries started to be PGP-marked. Thereafter, issue following moved to GitHub and the mailing records moved. Before variant 4, which utilizes Ajax broadly to upgrade ease of use, the product utilized HTML frames.[2].

•**Java Development Kit (JDK)** Java Development Kit (JDK) is an implementation of either one of the Java Platform, Standard Edition, Java Platform, Enterprise Edition, or Java Platform, Micro Edition platforms. Released by Oracle Corporation in the form of a binary product aimed at Java developers on Solaris, Linux, macOS or Windows. The JDK includes a private JVM and a few other resources to finish the development of a Java application.. Since the introduction of the Java platform, it has been by far the most widely used Software Development Kit (SDK). JDK (Java Development Kit) contains JRE(Java Runtime Environment).JDK contains JRE and other special programming tools like compiler, applet viewer and it's APIs for development, debugging and monitoring Java applications. Therefore it's size is 193. 66 MB for Windows x6.[3].

III. EXISTING SYSTEM

A. How it Actually works

In the Existing system the investigation officers finds it difficult to identify similar modus operandi, suspects or culprits from the hardcopy and vast number of case files belonging to different departments. Just by the weapons or attributes culprits can't be identified easily. Only investigators with knowledge of similar previous case histories can only get the idea of referring those files and find a suspect. Even if a fingerprint is found from the crime scene it gives only clue with matching with suspicious ones but can't predict the suspect. The fingerprint managing database is really weak . The status of suspect such as live/dead/prisoner/absconding can't be easily traced. The existing system is slow and complicated.

IV. PROPOSED SYSTEM

In proposed system, we focus on detection of suspects based on the type of weapons, accessories, modus operandi etc. This system provides an efficient method for the detection of suspects from a crime scene. In this system there are three kind of users which includes Admin,Officer,User. Admin will have the provision to add suspect and crime details in association with replies to the common users and approval of users. The Officers will have the privileges to add crime and suspect datas, search for suspect or similar case files. If a fingerprint is found from a crime scene, it can help in tracing out the suspect from the criminalsdata. Common people could give complaints and report any crimes to the authorities. Also the common people could check the progress of cases and can even see the details of missing people, which implicitly gives them a consciousness about their part in maintaining the stability of society as a privileged citizen .With the help of fuzzy algorithm we can easily fetch the data of suspect or similar crimes. By using the hashing algorithm data is encrypted to maintain it's secrecy and security. The fingerprint hashing algorithm is used to fetch suspects from fingerprints. So, we can be efficient enough to figure out a culprit without giving him enough time to escape.

Description

This system tracks the investigation status of criminal cases with logs and also predicts primary suspects. The system is proposed to help agencies like CBI, CID and other such bureau's to speed up investigation process and track status of multiple cases at a time. The system keeps logs of a case which includes case summary, people involved, disputes, past criminal history of those involved, Items recovered on scene and other details. The system realizes the type of case, allows admin to update the status of investigation, upload more images of crime, items found on scene etc. This allows authorized officers to check case status and look into its status online and also update any important info as and when needed. The system also consists of a suspect prediction , case prediction, fingerprint prediction algorithms. Based on type of case, modus operandi, possessions, accessories or other entities involved, the system studies the past criminal records of those involved in similar activities and based on this data it provides suggestions of suspects in a logical order. The system can also aid officers to criminals from fingerprint gathered from the scene of action. The system is designed to aid investigation teams to work collectively on cases, coordinate and also speed up the process by suggesting logical suspects based on data provided.

B.   Advantages

Processing large number of records helps to increase the accuracy of prediction system

Easy to identifying the suspect

Easy to detect similar case files

The system is effective by the usage of Fuzzy Algorithm and Hashing Algorithm

Creates a space for civilian's interactions

Data secrecy maintained

Freshly joined officers without knowledge of previous crime history can also get similar crime data efficiently

C.   Algorithm Used

Fuzzy Algorithm

Logically,In rationale, fuzzy logic is a type of many-esteemed rationale wherein reality worth of factors might be any genuine number somewhere in the range of 0 and 1. It is utilized to deal with the idea of fractional truth, where reality worth might go between totally evident and totally bogus. On the other hand, in Boolean rationale, reality upsides of factors may just be the number qualities 0 or 1.The term fuzzy logic was presented with the 1965 proposition of fuzzy set hypothesis by Azerbaijani researcher Lotfi Zadeh. Fuzzy logic had, in any case, been considered since the 1920s, as endless esteemed rationale—quite by Łukasiewicz and Tarski.Fuzzylogic depends on the perception that individuals settle on choices dependent on loose and non-mathematical data. Fuzzy models or sets are numerical method for addressing unclearness and uncertain data (henceforth the term fuzzy). These models have the ability of perceiving, addressing, controlling, deciphering, and using information and data that are dubious and need assurance. Fuzzy logic has been applied to many fields, from control hypothesis to man-made consciousness. In software engineering, inexact string coordinating (frequently informally alluded to as fluffy string looking) is the procedure of finding strings that match an example roughly (rather than precisely). The

issue of inexact string matching is regularly separated into two sub-issues: observing surmised substring matches inside a given string and observing word reference strings that match the example around.[4]

Hashing Algorithm

A hash function is any function that can be used to map data of arbitrary size to fixed-size values. The values returned by a hash function are called hash values, hash codes, digests, or simply hashes. The values are usually used to index a fixed-size table called a hash table. Use of a hash function to index a hash table is called hashing or scatter storage addressing.. Hash functions and their associated hash tables are used in data storage and retrieval applications to access data in a small and nearly constant time per retrieval.[5] They require an amount of storage space only fractionally greater than the total space required for the data or records themselves. Hashing is a computationally and storage space-efficient form of data access that avoids the non-linear access time of ordered and unordered lists and structured trees, and the often exponential storage requirements of direct access of state spaces of large or variable-length keys. Use of hash capabilities is based on statistical houses of key and feature interaction: worst-case behaviour is intolerably awful with a vanishingly small opportunity, and average-case behaviour may be almost optimal (minimum collision).Hash capabilities are associated to (and frequently harassed with) checksums, take a look at digits, fingerprints, lossy compression, randomization capabilities, error-correcting codes, and ciphers. Although the standards overlap to a few extent, every one has its personal makes use of and necessities and is designed and optimized differently. The hash capabilities vary from the standards numbered especially in phrases of facts integrity. A hash feature takes an enter as a key, that is related to a datum or file and used to pick out it to the facts garage and retrieval application. The keys can be constant duration, like an integer, or variable duration, like a name. In a few cases, the secret is the datum itself. The output is a hash code used to index a hash desk preserving the facts or records, or suggestions to them. A hash feature can be taken into consideration to carry out 3 capabilities: Convert variable-duration keys into constant duration (generally system phrase duration or much less) values, with the aid of using folding them with the aid of using phrases or different devices the use of a parity-retaining operator like ADD or XOR..Scramble the bits of the important thing in order that the ensuing values are uniformly allotted over the keyspace..Map the important thing values into ones much less than or same to the dimensions of the tableA precise hash feature satisfies fundamental houses: 1) it need to be very speedy to compute; 2) it need to decrease duplication of output values (collisions). Hash capabilities rely upon producing beneficial opportunity distributions for his or her effectiveness, lowering get right of entry to time to almost constant. High desk loading factors, pathological key units and poorly designed hash capabilities can bring about get right of entry to instances drawing near linear withinside the variety of gadgets withinside the desk. Hash capabilities may be designed to present the nice worst-case overall performance, precise overall performance below excessive desk loading factors, and in unique cases, perfect (collision less) mapping of keys into hash codes. Implementation is primarily based totally on parity-retaining bit operations (XOR and ADD), multiply, or divide. A essential adjunct to the hash feature is a collision-decision technique that employs an auxiliary facts shape like connected lists, or systematic probing of the desk to locate an empty slot.[6].

Fingerprint Hashing Algorithm

A Fingerprint hashing is blending unique mark acknowledgment and cryptographic techniques. The point is to play out an acknowledgment utilizing finger impression while, simultaneously, concealing the private data identified with the unique mark, hence empowering public finger impression layouts. The path of the image can be removed , to such an volume that patches such as curves, which take place in round 5% of the skilled fingerprints, circles; may be visible in very almost 60 to 70% of the fingerprints which are encountered.Whorls,simple curve, risen curve, spiral circles, ulnar circles, twofold circle and so on are likewise recognized. Also from those a hash can be created and comparison the particular mark pix through pixel with pixel depending on the important thing produced.[7].

V. RESULTS AND DISCUSSIONS

fig1: Admin Home Page

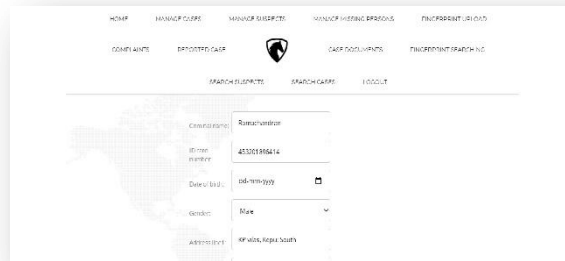fig 2 : Officer Home Page

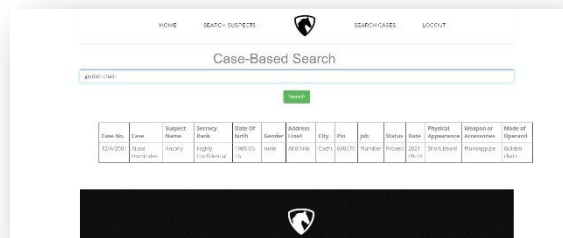fig 3 : User Home Page

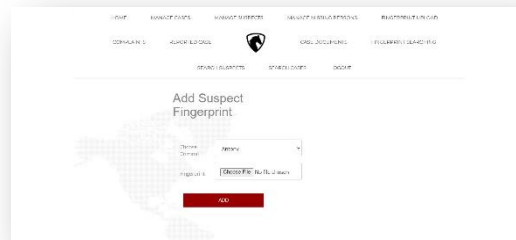fig 4 : Manage Suspect

fig 5 :Search Cases

fig 6: Add Fingerprint

VI CONCLUSION

This proposed system helps to enhance our crime data storing and fast and easy suspect prediction. The Fuzzy and Hashing, Fingerprint Hashingalgorithms are used to predict the suspect and similar case historieswith the data integrity is kept. If the crime is filled with vibrant modus operandi and the investigation in charge is a fresher, he/she could even easily fetch the crucial led for the investigation.So, in this proposed system we can easily predict the suspect easily.

REFERENCES

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