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Development Of A Model For Criminal Investigation Tracking With Suspect Prediction Using Machine Learning

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Abstract
Criminal investigation is the process of answering questions as to if how, where, when, why, and by whom a crime was committed. Over the years after a case has been filed, the investigation starts immediately at the place of crime that took place with the evidence and the eye witness if there is any. With the eye witness statement, the Police start to investigate the crime. Police officers have to go through series of investigations even from the scene before detecting the suspect and this process sometimes takes months or even takes one year. Also there is no platform that predicts the occurrence of the same crime and likely criminals in a particular period and place. The new model was trained using dataset containing previous crimes of criminals by adopting decision tree algorithm to build the model that will predict the suspect. The new model keeps logs of cases which include case summary, witnesses, past criminal history of those involved and other details. This will be able to determine the severity or involvement of the criminal using machine learning. The new model predicts the possible occurrence of the same crime using past criminal records in a given region within a given period of time in order to keep the Police on alert. Object Oriented Analysis and Design Methodology was adopted. The model was developed using Anaconda version 3.0 and Python, also the model was integrated to a web based platform using hypertext pre-processor. At the completion of the model, the model was able to predict suspect and also predict the possible occurrence of same crime using past criminal records in a given region within a given period of time and gives decision based on how the previous crime was investigated to assist security agencies in investigation.

Keywords: *Criminal, Investigation, Suspect, Machine Learning, Prediction*

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I. Introduction

Crime is an awful and illegal act against the law for doing wrong things out of which someone can be punished by police authorities and government. A criminal is a person who has committed or is involved with any kind of crime. Crime is basically “unpredictable" event. It is not constrained by space and time. It entirely depends on human behavior. There can be huge range of crime activities, for example, from illegal driving to terrorism attacks etc. Criminal records are one of the most sensitive and highly confidential information in society. Criminal records increasingly higher day by day and there is no proper way or a perfect system to manage criminal records in a more secure, effective, and confidential environment. Tracking the criminal records is also a very important thing for law enforcement agencies like Police or CID. Sharing the current Status of the Criminal record and the evidence gathered from the crime scene will affect the success of the investigation. Also predicting the suspect is another important thing in criminal investigation [5].

Criminal investigation is, in essence, the process of answering questions as to if how, where, when, why, and by whom a crime was committed [7]. To this end, investigators must assemble clues from various sources and arrive at a coherent account of the critical event. Although it is important to understand as completely as possible the circumstances surrounding a crime, this is not an end in itself. In Sweden, and in nations with an adversarial judicial system (e.g., the UK, the US), the official purpose of criminal investigation is to retrieve information that can be used as evidence in court [11]. The obtained evidence then becomes the basis for judges’ and juries’ decisions concerning the guilt of prosecuted defendants and the sentences imposed on those found guilty. From the above description it is evident that investigative activities cannot be fully understood if viewed detached from its context, but should be seen as intertwined with other components of the criminal justice system. Therefore, it is helpful to consider how investigators’ work relates to the prosecution process. In a prosecutor’s application for a summons, a claim is to be made concerning the criminal behaviour of a defendant in the past. A prerequisite for issuing a summons is, first and foremost, that the identity of the defendant is clear. Furthermore, the criminal act must be specified with regard to the time and place of the

offense. Finally, the circumstances surrounding the offense should be detailed and proven to fulfil the legal requisites for the specified crime classification. The investigative work carried out by the police authority serves to provide the prosecutor with all the above information. Whether or not the prosecutor is able to bring in an indictment against a suspect, considering the above requirements is entirely dependent on the result of the police investigation. In other words, a great contribution to the final outcome of a legal case is made already in the preliminary criminal investigation [4].

Criminal investigation is a multi-faceted, problem-solving challenge. Arriving at the location of a crime, an official is regularly required to quickly settle on basic choices, in some cases including life and death, in view of constrained data in a dynamic domain of dynamic and as yet advancing occasions. After a criminal occasion is finished, the agent is relied upon to save the wrongdoing scene, gather the proof, and devise an insightful arrangement that will prompt the framing of sensible grounds to distinguish and capture the individual or people in charge of the wrongdoing. To address these difficulties, police examiners, through preparing and experience, learn insightful procedures to create analytical plans and organize reactions. [8] Criminal investigation isn't only a lot of errand skills; it is similarly a lot of reasoning aptitudes. To turn into a compelling investigator, these abilities should be consciously comprehended and created to the point where they are purposely drawn in to work through the critical thinking process that is criminal investigation. Prepared reasoning and reaction can be hard to adjust into our own collections since we are altogether melded to be substantially less formal and less proof driven in our regular reasoning. In perspective on this investigation of criminal activity the whole process ends up being incredibly problematic.

Whenever a case against the crime is filed the investigation always starts from the scratch right away from the evidences found at the crime location and the eye witnesses present at the crime location. On the basis of the statement given by the eye witnesses about the crime and the criminal who committed that crime, the process of the investigations starts. As to reduce the stress of the police officers this thesis present a model as criminal investigation tracker with suspect identification that will help the officers to speed up the process of investigation and track status of on-going case by predicting out the primary suspects on the basis of the records which consists of compendium of the people associated to the case, former criminal background proofs recovered from crime location, etc. This digitized model makes the work easy for an officer to check the status of the case online and even allows for adding up the new important information related to the case as at when needed. The new system consists of suspect prediction algorithm to predict and suggest the suspects in the logical order using machine learning, decision tree algorithm to be precise.

II. Statement of the Problem

After a case has been filed, the investigation starts immediately at the place of crime that took place with the evidence and the eye witness if there is any. As per eye witness statement, the police start to investigate the crime. The following are the challenges faced in the existing crime investigation process and suspect prediction:

1. Police officers have to go through series of investigations even from the scene before detecting the suspect and this process sometimes takes months or even a year.
2. In all the researches done by other authors there was no means where crime rate in percentage was identified in a particular city.
3. Lack of intelligent platform that predicted the occurrence of same crime in a given period and in a given city.

III. Research Aim/Specific Objectives

The aim of this paper is to develop a model for criminal investigation tracking with suspect prediction using machine learning. The objectives are to:

1. Develop and train a model using dataset containing previous crimes of criminals by adopting decision tree algorithm to build the model that will predict the suspect.
2. Build a web management system that keep logs of cases which includes case summary, witnesses, past criminal history of those involved and other details, this will determine the severity or involvement of the criminal using machine learning.
3. Build a module that studies past criminal records of those involved and based on this data it provides suggestions of suspected persons in a logical order.
4. Build an intelligent module that will predict the possible occurrence of same crime using past criminal records in a given region within a given period of time in order to keep the police on alert.
5. Perform evaluation which was done on both the existing systems and the new model.

IV. Significance of the Study

This model will be a useful tool in the hands of Nigerian Police Force, CID and other such bureaus to speed up investigation process and track status of multiple cases at a time. This model will also allow authorized officers to check case status and look into its status online and also update any important information as and when needed. 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.

V. Scope of the Study

This paper focuses on building and training a model using dataset of previous crimes gotten from the internet containing attributes like the time, statement, mode of statement, e.t.c and use a decision tree algorithm to build the model. The model used a web management system to take in criminal statement, written confession, and run it through the model. This paper focussed on Nigeria Police Force for easy investigation and prediction of suspect.

VI. Review of Related Literature

A system is new that predicts crime by analysing a dataset containing records of previously committed crimes and their patterns. The new system works mainly on two ML algorithms: a decision tree and KNN. Techniques such as the random forest algorithm and Adaptive Boosting were used to increase the accuracy of the prediction model. To obtain better results for the model, the crimes were divided into frequent and rare classes. The frequent class consisted of the most frequent crimes, whereas the rare class consisted of the least frequent crimes. The new system was fed with criminal activity data for a 12-year period in San Francisco, United States. Using undersampling and oversampling methods along with the random forest algorithm, the accuracy was surprisingly increased to 99.16%.

A detailed study on crime classification and prediction using ML and deep learning architectures is presented. Certain ML methodologies, such as random forest, naïve Bayes, and an SVM have been used in the literature to predict the number of crimes and hotspot prediction [20].

Deep learning is a ML approach that can overcome the limitations of some machine-learning methodologies by extracting the features from the raw data. This paper presents three fundamental deep learning configurations for crime prediction: (1) spatial and temporal patterns, (2) temporal and spatial patterns, and (3) spatial and temporal patterns in parallel. Moreover, the new model was compared with 10 state-of-the-art algorithms on 5 different crime prediction datasets with more than 10 years of crime data.

A big data and ML technique for behaviour analysis and crime prediction is presented., in his work he discuss the tracking of information using big data, different data collection approaches, and the last phase of crime prediction using ML techniques based on data collection and analysis. A predictive analysis was conducted through ML using RapidMiner by processing historical crime patterns. The research was mainly conducted in four phases: data collection, data preparation, data analysis, and data visualization. It was concluded that big data is a suitable framework for analysing crime data because it can provide a high throughput and fault tolerance, analyse extremely large datasets, and generate reliable results, whereas the ML based naïve Bayes algorithm can achieve better predictions using the available datasets [9].

[20] Various data mining and ML technologies used in criminal investigations are demonstrated. The contribution of this study is highlighting the methodologies used in crime data analytics. Various ML methods, such as a KNN, SVM, naïve Bayes, and clustering, were used for the classification, understanding, and analysis of datasets based on predefined conditions. By understanding and analysing the data available in the crime record, the type of crime and the hotspot of future criminal activities can be determined. The new model was designed to perform various operations such as feature selection, clustering, analysis, prediction, and evaluation of the given datasets. This research proves the necessity of ML techniques for predicting and analysing criminal activities.

[20], the authors incorporated the concept of a grid-based crime prediction model and established a range of spatial-temporal features based on 84 types of geographic locations for a city in Taiwan. The concept uses ML algorithms to learn the patterns and predict crime for the following month for each grid. Among the many ML methods applied, the best model was found to be a DNN. The main contribution of this study is the use of the most recent ML techniques, including the concept of feature learning. In addition, the testing of crime displacement also showed that the new model design outperformed the baseline.

The authors considered the development of a crime prediction model using the decision tree (J48) algorithm. When applied in the context of law enforcement and intelligence analysis, J48 holds the promise of mollifying crime rates and is considered the most efficient ML algorithm for the prediction of crime data in the related literature. The J48 classifier was developed using the WEKA tool kit and later trained on a pre-processed crime dataset. The experimental results of the J48 algorithm predicted the unknown category of crime

data with an accuracy of 94.25287%. With such high accuracy, it is fair to count on the system for future crime predictions.

[16], the authors predicted crime using the KNNs algorithm in the years 2014 and 2013, respectively.

[16] Proved that higher crime prediction accuracy can be obtained by combining the grey correlation analysis based on new weighted KNN (GBWKNN) filling algorithm with the KNN classification algorithm. Using the new algorithm, we were able to obtain an accuracy of approximately 67%. By contrast, [17] divided crime data into two parts, namely, critical and non-critical, and applied a simple KNN algorithm. They achieved an astonishing accuracy of approximately 87%.

[16] Crime is predicted using a decision tree algorithm for the years 2015 and 2013, respectively. In their study, [15] used the ZeroR algorithm along with a decision tree but failed to achieve an accuracy of above 60%. In addition, [1] achieved a stunning accuracy of 84% using a decision tree algorithm. In both cases, however, a small change in the data could lead to a large change in the structure.

[9] A novel crime detection technique called naïve Bayes was implemented for crime prediction and analysis. [10] achieved an astounding crime prediction accuracy of 87%, but could not apply their approach to datasets with a large number of features. By contrast, [19] achieved an accuracy of only 66% in predicting crimes and failed to consider the computational speed, robustness, and scalability.

[6] New criminal investigation image retrieval based on deep learning; here CSI image retrieval technology based on low-level features uses content-based image retrieval (CBIR) framework to extract low-level features of the image or to fuse different low-level features, which confirms the feasibility of CBIR technology in CSI image retrieval. The author proposes to combine low level features of image dominant color descriptors as colour features, gray-level co-occurrence matrix as texture features to improve CSI image retrieval performance. Final experimental results show that the algorithm can effectively describe the content of CSI image and maintain a high average precision.

[2] New a Comparison of Local Binary Pattern and Eigen face for Predict Suspect Positive Drugs. In their work, the dataset is generated from online sources by collecting and pre-processing 30 images of people before and after drug. Two algorithm local binary pattern and Eigen faces for predicting suspect positive drugs based on face images were compared. The experiment shows that the result of the prediction using Local binary pattern is better than the prediction using Eigen faces. However, a higher accuracy of prediction reaches only 75 %. The result is that Local binary pattern is better than the prediction using eigen faces.

[12] and his team looked at new measures that provide metrics for an information-sharing system in a community of sex offenders in Southern California. On each of the four focus occurrences, offenders were matched (citations, field interviews, crime cases, and arrests). The quantity and timing of police events were related to the sharing of information on sex offender registry status. Text summarizing, which Laith Abualigah and his four collaborators devised, creates summaries from raw sources by retaining noteworthy information. Systems for text summarizing follow extractive and abstractive principles.

They create extractive compressive summaries for oracles. KALIMAT corpus of 18 M words is utilized to assess the new method.

[14] "Searching for Bugs using Probabilistic Suspect Implications" IEEE Transactions on Computer-Aided Design of Integrated Circuits and Systems [18]. In his work due to the excessive cost associated with manual RTL design debugging, automated tools are often employed to identify a set of suspect bug locations behaviour of these tools allows partial results to be analysed before the suspect search is complete. In his work he proposes a new SAT–based debugging algorithm which predicts where solutions are most likely to be found and prioritizes examining these locations.

This debugging algorithm is proven to be better than the VLSI models reaching an accuracy rate of 87 percent.

[3] "Wordnet-Based Criminal Networks Mining for Cybercrime Investigation", in their work, to combat the increasing number of criminal activities, they propose a framework to analyse chat logs for crime investigation using data mining and natural language processing techniques. Their new framework extracts the social network from chat logs and summarizes conversation into topics. The result of their work can be a word taxonomy used in malicious online conversations that represents street terms of certain crimes.

"On the use of redundancy to reduce prediction error in alternate analog/RF test" In their work, a promising approach is to adopt alternate test strategy, that is a strategy in which test results are derived from indirect low-cost measurements. Use only indirect measurements to predict device specifications during production testing. The result of their research is manufactured circuits as good or bad regarding its datasheet.

VII. Research Gap

In all the researches done by other authors there is no means where crime rate in percentage can be identified in a particular city. The new model will help the law enforcement agencies to know exactly the area where there is higher rate of crime by percentage in a particular city. Most of the existing models require to be

run in a particular place or region but in the new model approach is not limited to a particular place or type of crime. In the existing system there is no means where crimes can be registered; in the new model users can register crimes even at home and no need to run to the Police Station since there will be an online platform where crimes can be registered. Finally there is lack of intelligent platform that can predict the occurrence of same crime in a given period and in a given place. The new system will be able to predict the occurrence of the same crime in a given period of time to enable the Police to be at alert.

VIII. New System Design

The system is a criminal investigation tracker system that tracks the investigation status of criminal cases with detailed logs and also predicts primary suspects using decision tree algorithm. A web application will be developed which will be used for taking previous crime, the web application keeps detail logs of a case which includes criminal statement, written confession, and run it through the model this will determine the severity or involvement of the criminal using machine learning.

A model developed and trained using dataset containing previous crimes, and the containing attributes. e.g. the time, statement, mode of statement, e.t.c and use a decision tree algorithm to build the model, decision tree algorithm will be used which will be loaded in the web application which will do the prediction. The dataset used in this model will be collected online or in police headquarters.

Decision tree learning is a method commonly used in data mining. The reason for choosing decision tree is to create a model that predicts the value of a target variable based on several input variables. The algorithm that will be used for this system is decision tree, this will compare the parameters in the database and from there we possible outcome will be gotten.

The new system will also be able to predict the possible occurrence of same crime using past criminal records in a given region within a given period of time in order to keep the Police on alert. The model will take log of all the crimes committed by a criminal, and also monitoring if there is any new one by comparing a new criminal entry with the existing one's in the database. If it is same person, It will be logged in then to predict a crime that might likely happen or to predict what crime a particular offender might commit, or capable of committing, a machine learning model will be used to run existing dataset of criminal records

For Python code to run on the web, we used a web framework - Flask. This is a micro web framework written by Python. Here, we are going to use Flask to build Python Web App. Activate the Python environment on your computer and then install Flask with the "pip" package installer.

First, we'll import the libraries required to build a decision tree in Python. Load the data set using the read_csv() function in pandas. Display the top five rows from the data set using the head() function. Separate the independent and dependent variables using the slicing method.

The system under consideration is a web-based application. An advanced criminal mechanism of detection whose main goal is to forecast crimes and their tendencies, the proposed system employs a decision tree algorithm approach known as "Prediction Rules" for crime pattern detection, as well as automation for early crime pattern prediction, which helps to avert crimes. Predicts crime trends based on past crime information, date, and location.

The model was developed using the following technical process which are:

Dataset collection:

As you know, machines initially learn from the data that you give them. It is of the utmost importance to collect reliable data so that your machine learning model can find the correct patterns. The quality of the data that you feed to the machine will determine how accurate your model is. If you have incorrect or outdated data, you will have wrong outcomes or predictions which are not relevant. Make sure you use data from a reliable source, as it will directly affect the outcome of your model. Good data is relevant, contains very few missing and repeated values, and has a good representation of the various subcategories/classes present.

Dataset pre-processing:

Crime Dataset was gotten from the internet, the data was cleaned and arranged to remove unwanted data, missing values, rows, and columns, duplicate values, data type conversion, etc. the dataset was restructured by changing the rows and columns or index of rows and columns. The dataset was visualized, the data to understand how it is structured and understand the relationship between various variables and classes present.

Splitting the cleaned data into two sets a training set and a testing set, the training set is the set the model learns from. A testing set is used to check the accuracy of the model after training.

Choosing a Model and Algorithm:

A machine learning model determines the output of the model after running a machine learning algorithm on the collected data. Decision tree algorithm was used.

Model Training:

Training is the most important step in machine learning. In training, the prepared dataset was passing to machine learning model to find patterns and make predictions. It results in the model learning from the data so that it can accomplish the task set. Over time, with training, the model gets better at predicting.

Model Testing:

After training the model, the next step is to check to see the performance of the model. This is done by testing the performance of the model on previously unseen data. The unseen data used is the testing set that was splitted our data into earlier. If testing was done on the same data which is used for training, then accuracy will not be gotten, as the model is already used to the data, and finds the same patterns in it, as it previously did. This will give room for high accuracy. The block diagram in figure 3 further explains the process.

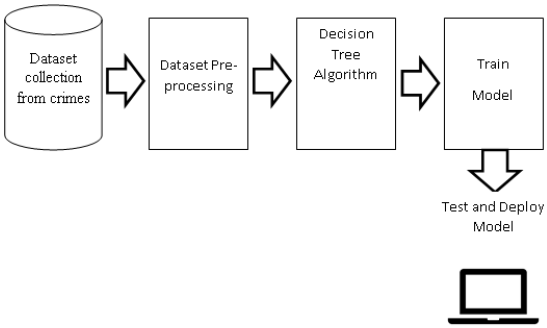

Figure 1: Block Diagram of the New System

Figure 4 is the block diagram of the new system that explains the processes of acquiring the dataset, training the dataset, processing the dataset, using the appropriate algorithm, training the developed model and deployment.

IX. High Level Model of the New System

Figure 2 describes the complete processes of the new system and how information is navigated from one user to another.

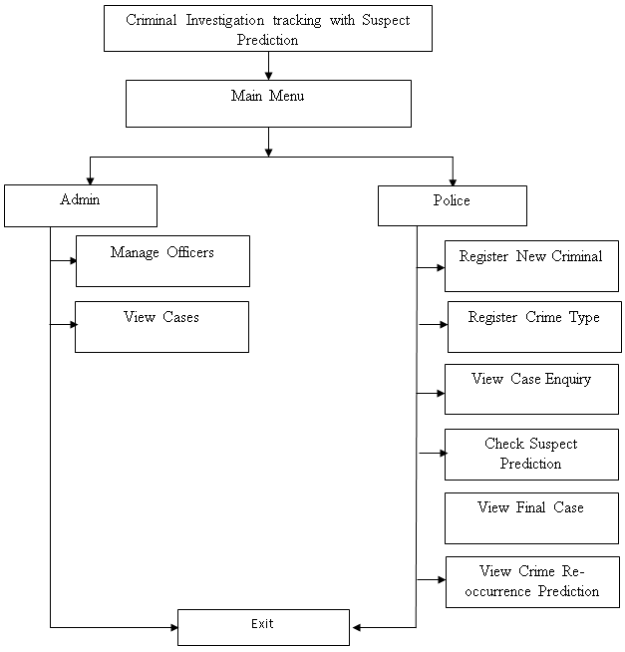

Figure 2: High Level Model of the New System

The view case attribute here, the admin can be able to view the cases present. In the Police Login, there is attribute as register new criminal in this case there will be criminal name, address, age, gender, type of crime, location, evidence, crime month, crime year, time of day, suspect name by this the criminal information gets added to the system. At the next level that is Register crime type, the police register the details of the case name, that is, what type of crime has happened, the name of the victim, type of crime, location and evidences that are been found on the location of the crime. The next stage is the prediction here; the prediction about the suspect is predicted using the algorithm known as Decision Tree algorithm.

The next attribute is about the case enquiry, where the police can access the information about the case and can get the advanced information about the probable suspect of the case. The next attribute is the Final case, here in this the case name has to be selected and the status of the case has to be gotten, that is, whether the case is completed or it is pending. Then at the detail of the case i.e. the suspect information we have an option, that is, to add the case for investigation or not once investigation is added then the prediction is gotten about the crime that who is the major suspect in the crime. The final and the important attribute is the prediction part, here there are three main attributes, that is, type of crime, location and evidence of the case and when search button is clicked the result of the crime is generated.

The final attribute is view crime re-occurrence prediction, here the model uses the criminal details in the database to predict the next occurrence of crime in a particular region and period to enable the Police be at alert.

X. Use Case Model of the New System

A use case is a list of actions or event steps typically defining the interactions between a role (known in the Unified Modelling Language as an actor) and a system to achieve a goal. The actor can be a human or other external system. Figure 3 describes the various actors of the new system.

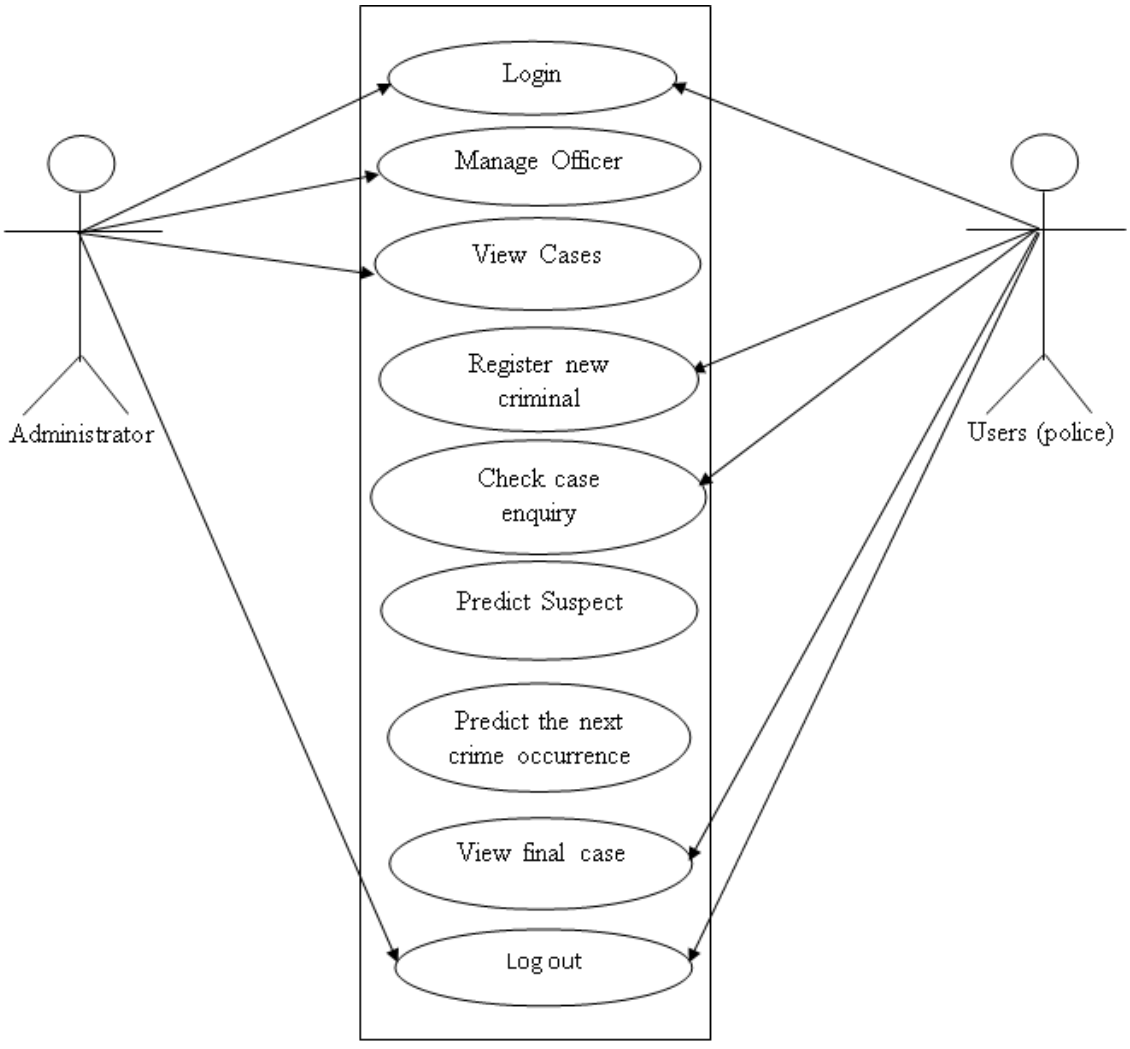

Figure 3: Use Case Diagram of the New System

Figure 3 describes the use case diagram of the new system and various functions of the actors.

XI. User Interface Implementation

User interface implementation describes the layout of the user interface after successful development of the system. The interface consists of links and submits buttons that navigate users from one module to another upon click.

Figure 3 is the user interface implementation of the application where users can interact with the system.

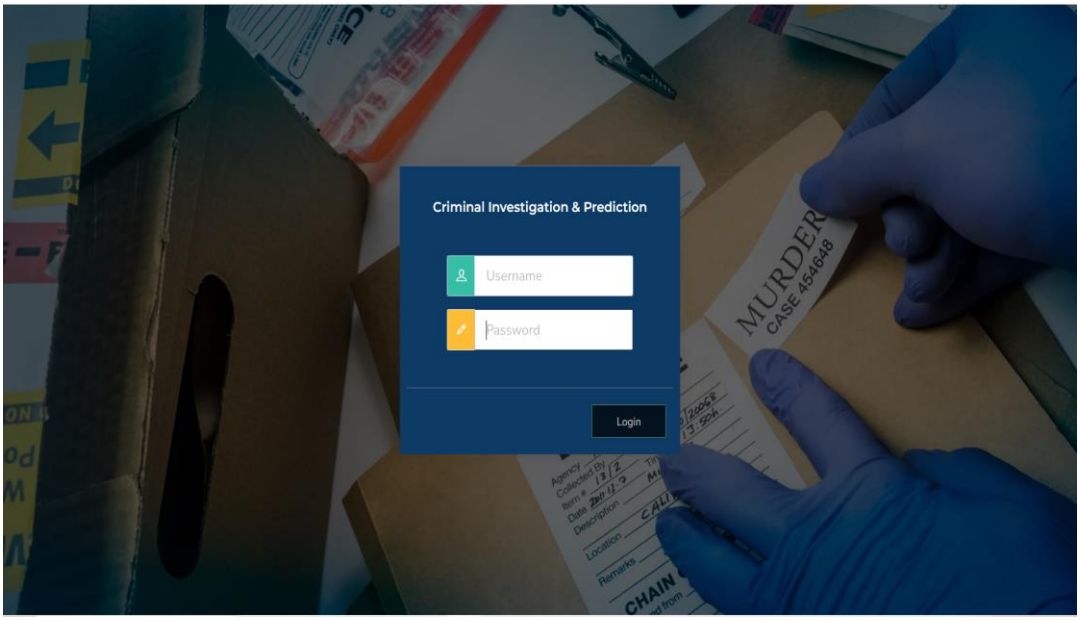

Figure 3: User Interface Implementation

Figure 4: User Interface for Investigation Implementation

XII. Input Interface Implementation

The implementation of the input interface allows the user to input its data into the system for processing. After developing the system, the input forms where implemented as shown in the figure 5.

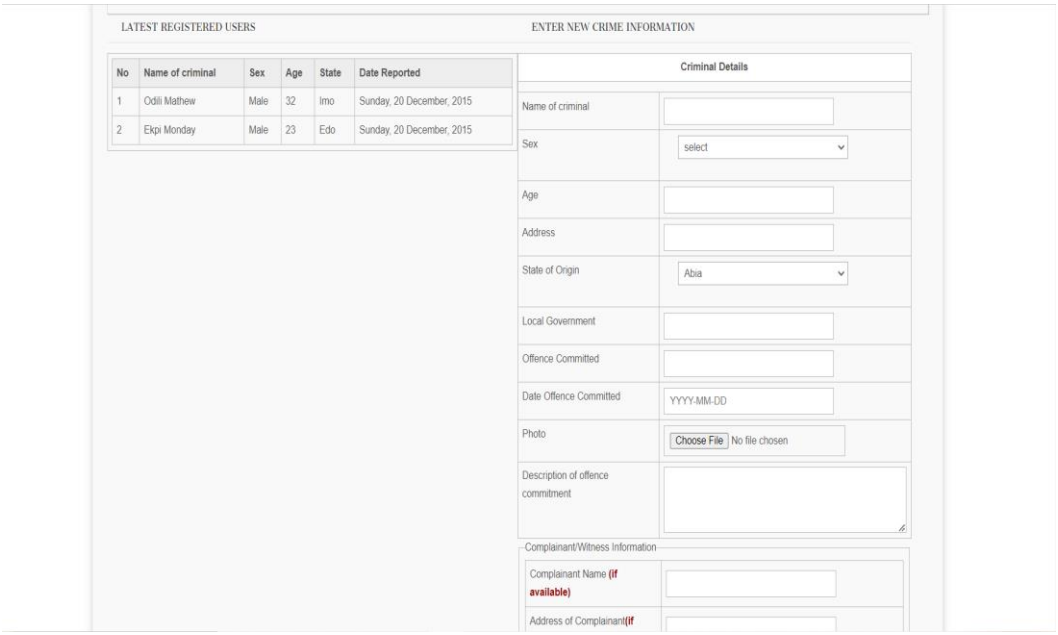

Figure 5: Registration Input Interface Implementation

Figure 5 is the registration input interface implementation that enables a user to register criminal records to this system.

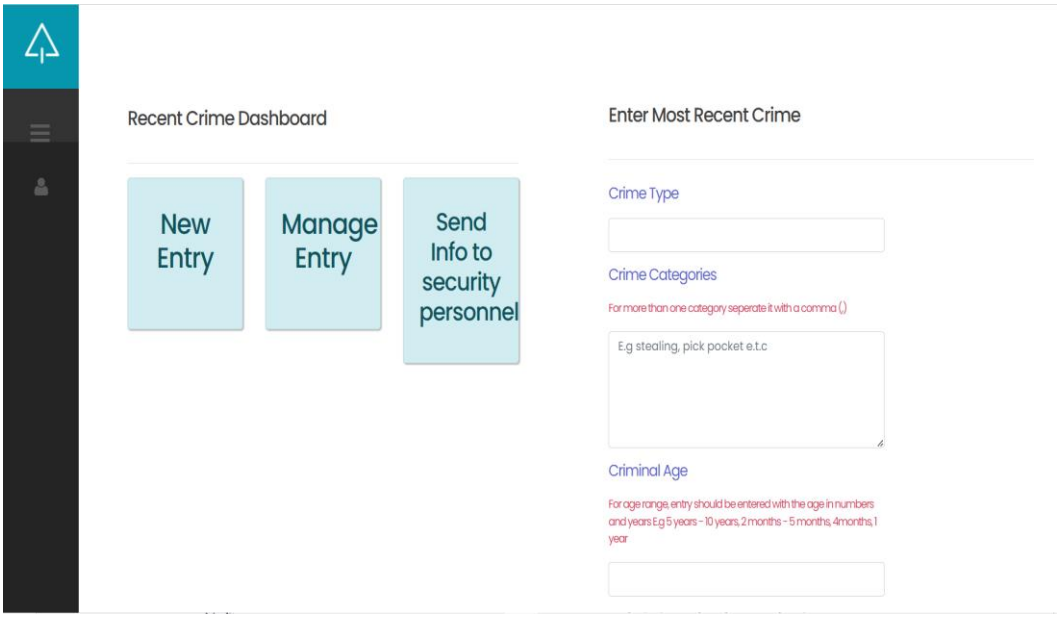

Figure 6: Crime Entering Input Interface Implementation

XIII. Main Menu Implementation

Upon successful login validation the main menu pops up and provides an interface that enables users to navigate from one module to another and also to perform basic system functionalities. Upon login successful login validation the main menu pops up and provides an interface that enables users to navigate from one module to another and also to perform basic system functionalities.

XIV. Output Interface Implementation

The system output consists of series of processed input to the system. The output are in the form of validated login input, either by displaying an error message or a navigating the user to the main menu. While the output also consists of information of crimes entered into the system at various times. Figure 7 shows the output of a registered criminal.

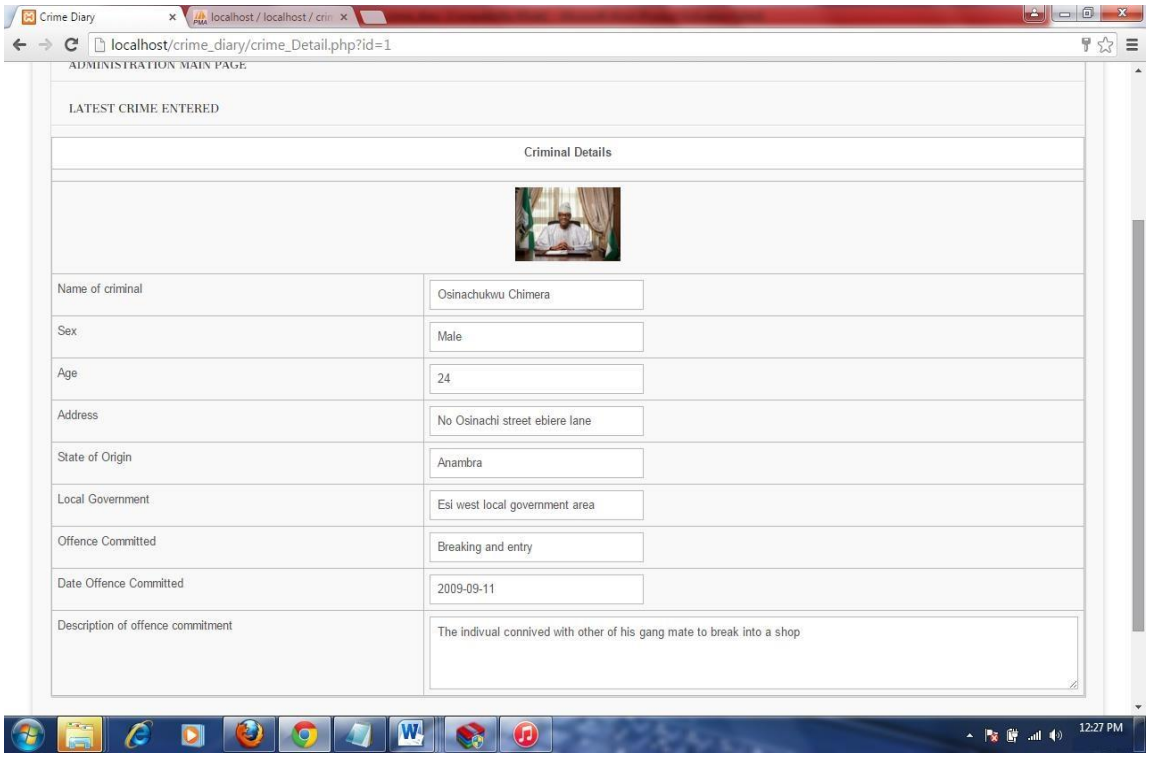

Figure 7: Output Interface Implementation

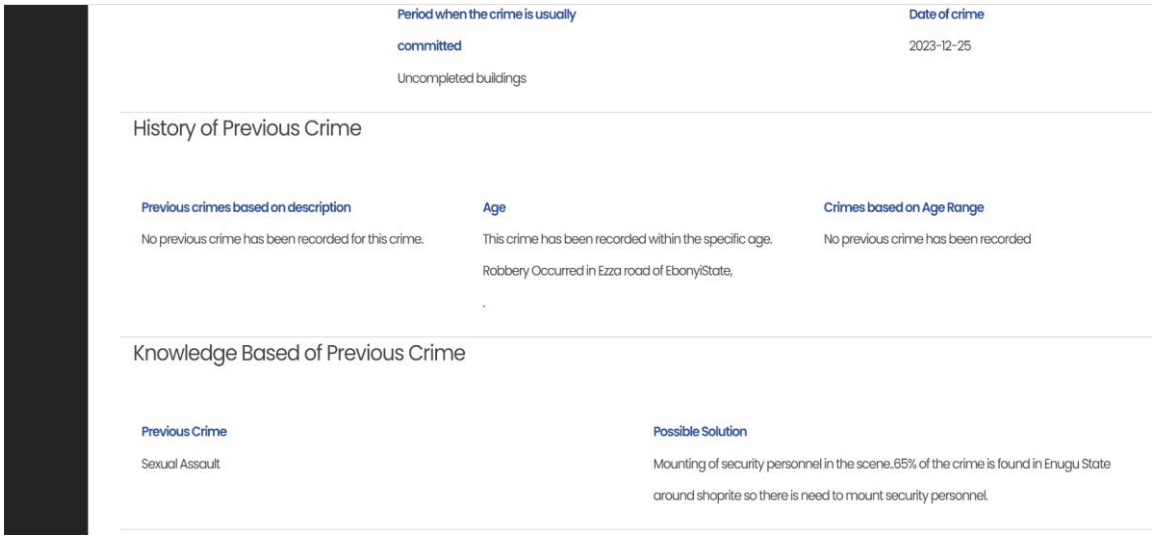

Figure 8: Output Interface Implementation

XV. Choice of Implementation Tools

For this research, Python programming language was used to code the model that detect and classify suspect level. Below are other programming language used in achieving the research objectives

PYTHON: Python is high-level programming, interpreted, object oriented language with dynamic semantics. Its high-level built in data structures, combined with dynamic typing and dynamic binding make it very attractive for Rapid Application Development, as well as for use as a scripting or glue language to connect existing components together.

JUPYTER: Exists to develop open-source software, open-standards, and services for interactive computing across dozens of programming languages. It supports over 100 programming languages (called "kernels" in the Jupyter ecosystem) including Python, Java, R, Julia, Matlab, Octave, Scheme, Processing, Scala, and many more.

Anaconda: Anaconda is a Python prepackaged distribution of Python which contains a number of Python modules and packages, including Jupyter, and other data science library. It is a free and open-source

distribution of the Python and R programming languages for scientific computing, and it aims to simplify package management and deployment.

XVI. Discussion and Future Work

In summary, the author developed a criminal investigation tracker system that tracks the investigation status of criminal cases with detailed logs and also predicts primary suspects using decision tree algorithm. The developed model is a criminal investigation tracker system that tracks the investigation status of criminal cases with detailed logs and also predicts primary suspects using decision tree algorithm. A web application was developed which was used for taking previous crime, the web application keeps detailed logs of a case which includes criminal statement, written confession, and run it through the model to determine the severity or involvement of the criminal using machine learning.

A model was developed and trained using dataset containing previous crimes, and the containing attributes. For example, the time, statement, mode of statement, e.t.c and used a decision tree algorithm to build the model, decision tree algorithm was used which was loaded in the web application to perform the prediction. The dataset used in this model was collected online or in Police Headquarters. The model was able to predict the possible occurrence of same crime using past criminal records in a given region within a given period of time in order to keep the Police on alert. The model was able take log of all the crimes committed by a criminal, and also monitoring if there is any new one by comparing a new criminal entry with the existing ones in the database.

The recommended remedy allows for just incident detection, though it would be possible to adapt this system to foresee incidents as technology advances. It is recommended that CCTV should be mounted in every area in the country and also for further research the data acquired from the CCTV stream will be used in the next system training. To provide a viable channel of communication between a crime and incident and pertinent agencies, the recommended web application should be enhanced further. It is also recommended that a unique method for character training, crime including weapons, crime prediction based on real world data, and face and fingerprint identification should be used for data training for more accurate result.

XVII. Conclusion

The necessity for a computerized platform for crime logs management can't be over-stressed. The criminal investigation tracker enhances proper and efficient management of criminal records, thereby helping in making informed decisions and improving reliability thus improving enforcement operation. The developed and train model was able to use dataset containing previous crimes of criminals by adopting decision tree algorithm to build the model and the model was able to predict the suspect. The model was a web management platform that keeps logs of cases which includes case summary, witnesses, past criminal history of those involved and other details; which determine the severity or involvement of the criminal, the developed model was intelligent because it predict the possible occurrence of same crime using past criminal records in a given region within a given period of time in order to keep the police on alert.

References

[1]. Aqbal, Y.F., Huang, H., And Ma, L.H. (2017). Ak-Modes: Aweighted Clustering Algorithm For Finding Similar Casesubsets. 2010 Ieee International Conference Onintelligent Systems And Knowledge Engineering, Hangzhou, China, Pp. 218-223. Https://Doi.Org/10.1109/Iske.2010.5680876[4]

[2]. Bagus, J.Y., Nasridinov, A., And Park, Y.H. (2020). Internetof Things For Smart Crime Detection. Contemporaryengineering Sciences, 7(15): 749-754.Http://Dx.Doi.Org/10.12988/Ces.2014.4685[45]

[3]. Benjamin, S., And Leitners, P. (2016). An Analysis Of Datamining Applications In Crime Domain. 2008 Ieee 8th International Conference On Computer And Informationtechnology Workshops, Sydney, Qld, Australia, Pp.122-126. Https://Doi.Org/10.1109/Cit.2008.Workshops.80[39]

[4]. Bring, P., Maggio, R., And Ferrara, C., (2019) "Not Necessarily Buried Bodies: Forensic Gpr Investigations From Criminal To Civil Justice" 2015 8th International Workshop On Advanced Ground Penetrating Radar.

[5]. Deshimukh, P., (2020). A Revised Frequent Pattern Model For Crime Situation Recognition Based On Floor-Ceil Quartile Function. Procediacomputer Science, 55: 251-260.Https://Doi.Org/10.1016/J.Procs.2015.07.042[15]

[6]. Dongyuan, P., And Xiaojun, J. (2020). Gaining Insight In Domestic Violence With Emergent Self-Organizing Maps. Expert Systems With Applications, 36(9): 11864-11874.Https://Doi.Org/10.1016/J.Eswa.2009.04.027[13]

[7]. Greenwood, N., Chaiken, J., And Petersillia, K., (2018) "Comparison Of Local Binary Pattern And Eigenfaces For Predict Suspect Positive Drugs"2020 2nd International Conference On Broadband Communications, Wireless Sensors And Powering (Bcwsp).

[8]. Heartfield, F., (2016). An Iot-Based Architecture Forcrime Management In Nigeria. In: R. K. Shukla Et Al.(Eds) Springer Nature Singapore Pte Ltd.[6]

[9]. Jablonski, J., (2022). Natural Language Processing With Python's Nltk Package. (Real Python) Retrieved From Https://Realpython.Com/Nltk-Nlppython/

[10]. Jangra, E.K., And Kalsi, S.H., (2016). Propose Data Mining Ar-Ga Model To Advance Crimeanalysis. Iosr Journal Of Computer Engineering. (Iosr-Jce), 14(5): 38-45.Https://Doi.Org/10.9790/0661-1453845[43]

[11]. Koppen, G., And Penrod, H., (2016) "Searching For Bugs Using Probabilistic Suspect Implications" Ieee Transactions On Computer-Aided Design Of Integrated Circuits And Systems (Volume: 39, Issue: 12, Dec. 2020).