A HOLISTIC FRAMEWORK FOR CRIME PREVENTION, RESPONSE, ANALYSIS ON WOMEN SAFETY

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ABSTRACT : The victims can file the FIR through the website under various sections. The user can send photo evidence if any online. There will be an 'SOS 'capability in which, the user can press a button and his/her location will be sent to the nearest Police station. There will be a separate component for the accident victims so that FIR can be registered fast and treatment can be started as soon as possible. In this current system, user's information will be kept confidential and only users complain will be forwarded to its nearest police station. Users complain number will be forwarded from the server side automatically. For identifying location and authentic person, concept of cookies and IP addressing has been used. To eliminate the location conflicts between police station, server will play a vital role. It will search the address table using IP address and forward message to that police location from where the message has been received. We intend to create a project which will help bridge the gap between the police department and the common man. 'Online FIR Registration and SOS system' project will have an app from where the users can file FIR against the offender under the various sections. The main site will be maintained by the admin (from the police) who will then notify the user if the FIR has been registered and the necessary action has been taken.

INTRODUCTION

This project Online Crime Reporting System has been developed on C#, ASP and SQL Server. The main aim for this project is to provide all crime management solutions which are easily accessible to everyone. This system starts with the every people who want to log a complaint through the internet so this project is very useful for police department and social worker to find out the problem in the society without people are coming to the police station every time. The main purpose of this system is to manage criminal details in a centralized database and provide solution for public to give complaint through online and get online and get online service. This project provides a lot of features to manage all the data in very well manner. The system has been developed to override the problems prevailing in the practicing manual system. This project is supported to eliminate and in some cases reduce the hardships faced by this existing system. Moreover this system is designed for the particular need of the company to carry out operations in a smooth and effective manner. The application is reduced as much as possible to avoid errors while entering the data. It also provides error message while entering invalid data. No formal knowledge is needed for the user to use this system. Thus by this all it proves it is user-friendly. Online crime reporting system as described above, can lead to error free, secure, reliable and fast management system. It can assist the user to concentrate on their other activities rather to concentrate on the record keeping. The purpose of this project is to automate the existing manual system by the help of computerized equipment's and full-fledged computer system, fulfilling their requirements, so that

their valuable data/information can be stored for a longer period with easy accessing and manipulation of the process.

. LITERATURE SURVEY

Lal, Divya & Abidin, Adiba & Garg, Naveen & Deep, Vikas. (2016). Advanced Immediate Crime Reporting to Police in India. Procedia Computer Science. 85. 543-549. 10.1016/j.procs.2016.05.216.

One of most important area in Crime investigation is efficient way of reporting crime. Till now, crime reporting system in India is online FIR system or manual reporting in Police stations. If any incident happens in any area, then crime reporting can be done via telephone or in person. No actual scene reporting is possible till date. People should be able to seek help in case of emergency on time. A large number of incidents happen in front of people but people are unable to report those incidents to police immediately. India must focus on inculcating an automated system for immediate crime reporting to police surpassing all controllable and uncontrollable factors responsible for unreported crimes. Hence, this paper proposes a smart system that can be implemented for immediate crime reporting to enhance crime reporting which is highly required in today's scenario.

A. Khan, A. Singh, A. Chauhan, A. Gupta, CRIME MANAGEMENT SYSTEM, International Research Journal of Engineering and Technology (IRJET), Volume: 06 Issue: 04 | Apr 2019

The "Crime Management System" is a web-based website for online complaining and computerized management of crime records. Here in this website a person who wishes to file a complaint or report an incident must register before log in and once the admin authenticates the user he or she can login into the website and file a complaint. This complaint will be received by police and police can send a message regarding status of the complaint to the user who filed the complaint. Police can use this software to manage different crimes and some of the works which is done in police station manually. Police gets their login password from admin directly. Some of the modules like news, safety tips, missing persons and most wanted criminals can be viewed through the website without logging in. So this website helps police to find out the problems in the society without them actually coming to the police station.

R. S. B. Krishna, B. Bharathi, M. U. Ahamed. A and B. Ankayarkanni, "Hybrid Method for Moving Object Exploration in Video Surveillance," 2019 International Conference on Computational Intelligence and Knowledge Economy (ICCIKE), Dubai, United Arab Emirates, 2019, pp. 773-778, doi: 10.1109/ICCIKE47802.2019.9004330.

Moving object in a video could be explored using hybrid methodologies as one among the enticing field of vision in computers. It is extensively applied in video surveillances and target identification system. Extracting reliable information accurately is a rigorous task in a challenging environment. This paper investigates the problem of detecting an object in dynamic scenes. We suggest two method 1) feature extraction using FBF 2) Image matching using ISURF. The ISURF (Improved Speeded up Robust Feature detection) is the improvised

method of original SURF algorithm. In this the matching duration is reduced by limiting the total number of features to be compared. The FBF (Fast Bilateral Filtering) algorithm is suggested for feature extraction and denoising the captured key frames. Thus this paper proposes a hybrid method for moving object exploration in a dynamic scene with reduced time.

A. Jesu doss, M.J. Daniel, J.J. Richard, Intelligent medicine management system and surveillance in IoT environment, in *IOP Conference Series: Materials Science and Engineering*, vol. 590, no. 1 (IOP Publishing, UK, 2019), p. 012005

Medicine management based on Internet of Things (IoT) has great potential in medical field. We propose a surveillance security and maintenance for medicine in IoT environment. The proposed platform has an intelligent medicine security box that gives update of the medicine room and alerts when trespassers are prohibited. The medicine box is wirelessly connected to VNC viewer application. It is an android Application which runs through raspberry pi and it gives timely updates about medicines by the sensor connected to it. The surveillance camera capture the image of the person enters the room. If any person enters the room it automatically gives an SMS alert.

Kalaiarasi, G. & K K, Thyagharajan. (2019). Clustering of near duplicate images using bundled features. Cluster Computing. 22. 10.1007/s10586-017-1539-3.

Clustering the images is generally based on the image's visual features. Selection of relevant features is the most essential task. A clustering approach based on the bundled features is presented in this paper. Bundling of affine scale invariant feature transform (ASIFT) feature helps to cluster the near duplicates. When the local features are combined with the ASIFT features, the clustering efficiency is increased. Clustering the results from the web image search engines is very essential to help users narrow their search. We applied our idea of clustering with bundled features over Google Image search results. The results obtained show that the presented approach outperforms compared to the clustering done only with local features.

P. Yugandhar, B. Muni Archana, Crime reporting system. Int. J. Innovative Res. Technol. 4(11), 1745–1748 (2020)

Network administration is conveyed in this social insurance extend. In the present venture, client indications have been regarded as and the specialists who can work on the predetermined manifestations or illnesses are distinguished. The recognized specialists alongside their areas have been discovered in a semantic manner also it is being offered reverse for the client. At this time, the manifestations prearranged by the client have been examined and contrasted and the prepared lay down where it is put away in a server. At first the information set is prepared totally. The lot of information present within the server information, specialists have been likewise permitted so as to record within its speciality. When client gives their side effects, the web related to semantic has been started and client question is investigated. On these given facts the conceivable outcomes of

sicknesses, specialists who are identified with those specific infections have been chosen. The choice at this time happens amongst the different classes of specialists accessible. At this point the researchers utilize the learning through the machine calculation procedures. In the process of learning through machine, the researchers have to order i.e managed and unsupervised calculations. The distinction connecting the directed and unsupervised calculations has been such that it is being managed where one can recognize the preparation layout at which it is in unverified; we don't have the foggiest idea about the preparation layout. In an unmanaged setup, one can utilize numerous methods such as bunching, k-implies, desire augmentation, simulated neural systems procedures and so on. In every one of these systems, the researchers try to attempt to assess the capacity of vast number of sources of info that have been obscure. In our venture the researchers have wanted to execute unverified calculation. In this case, procedure the researchers want to utilize is grouping. Grouping since one can parcel those into bunches plus the information in every group would have the comparative kind of information. The semantic network with cosmology supported is a capable system. At this time All the specialists data, for example, his accessibility, operational in healing center, expense charges and doctor's facilities separation are put away RDF-Schema documents (Resource Development Frameworks). The researchers possess a range of operator framework in light of SWS organization handle. According to the present mould, the researchers have 2 operators to be specific SRA (Service Requester Agent) and SPA (Service Provider Agent). SRA effort is to perceive the illness as of the person who is taking treatment. SPA effort is to decide the most excellent connected specialist who get together the persons necessities. Due to the specialists who are deemed related show up, with utilizing assumption investigation one can obtain an excellent specialist in view of their surveys.

J. Refonaa, G.G. Sebastian, D. Ramanan, M. Lakshmi, Effective identification of black money and fake currency using NFC, IoT and android, in *2018 International Conference on Communication, Computing and Internet of Things (IC3IoT)* (IEEE, 2018), pp. 275–278

In India eradicating black money has become a major issue. Though government has taken several steps to eradicate black money but reports on government policy shows that steps taken by government was not very successful. But with the advent new technologies it is possible to completely remove black money of the market. This paper describes a smart way using modern advanced technology to eradicate black money and fake currency in a simple and efficient manner. This can be achieved by using one of the most popular technology like NFCs or high frequency RFID tag. These tags can be integrated inside the currency and each paper currency can be tracked and accounted at all time and place. This paper puts forward a cost efficient solution to long time problem of black money.

SYSTEM ANALYSIS

INTRODUCTION

System analysis is a general term that refers to an orderly, structured process for identifying and solving problems. We call system analysis process lifecycle methodology, since its relates to four significant phases in the life cycle of all the business information system. The life cycle is divided into four phases. They are, □

Study Phase Design Phase Development Phase Implementation Phase In the study phase, detailed study of the project is made and clear picture of the project should be in mind by this time. In the design phase designing of the input-output of the table and development phase is the physical designing of the input output screens and coding of the system. System implementation actually implements in the system by making necessary testing.

EXISTING SYSTEM

Data mining-based crime investigation systems the number of crime incidents that is reported per day in India is increasing dramatically. The criminals today use various advanced technologies and commit crimes in really tactful ways. This makes crime investigation a more complicated process. Thus, the police officers have to perform a lot of manual tasks to get a thread for investigation. This paper deals with the study of data mining-based systems for analyzing crime information and thus automates the crime investigation procedure of the police officers. The majority of these frameworks utilize a blend of data mining methods such as clustering and classification for the effective investigation of the criminal

LIMITATIONS OF EXISTING SYSTEM

- Time Consuming
- More man power
- A lot of space is required to store all registers
- Insufficient resources for Investigation
- Lack of flexibility
- Outdated technology

PROPOSED SYSTEM

The victims can file the FIR through the website under various sections. The user can send photo evidence if any online. The police will have a criminal database through which they can access the records anytime. In this current system, user's information will be kept confidential and only users complain will be forwarded to its nearest police station. Users complain number will be forwarded from the server side automatically. For identifying location and authentic person, concept of cookies and IP addressing has been used. While registering a case if at all the user has photo evidence he can send it too through the app for making a strong case .The users will be notified if the police have filed the FIR. This project is cop friendly too. The FIR in such cases will be registered quickly so that the doctors can start the treatment as early as possible.

SYSTEM DESIGN

SYSTEM ARCITECTURE DIAGRAM

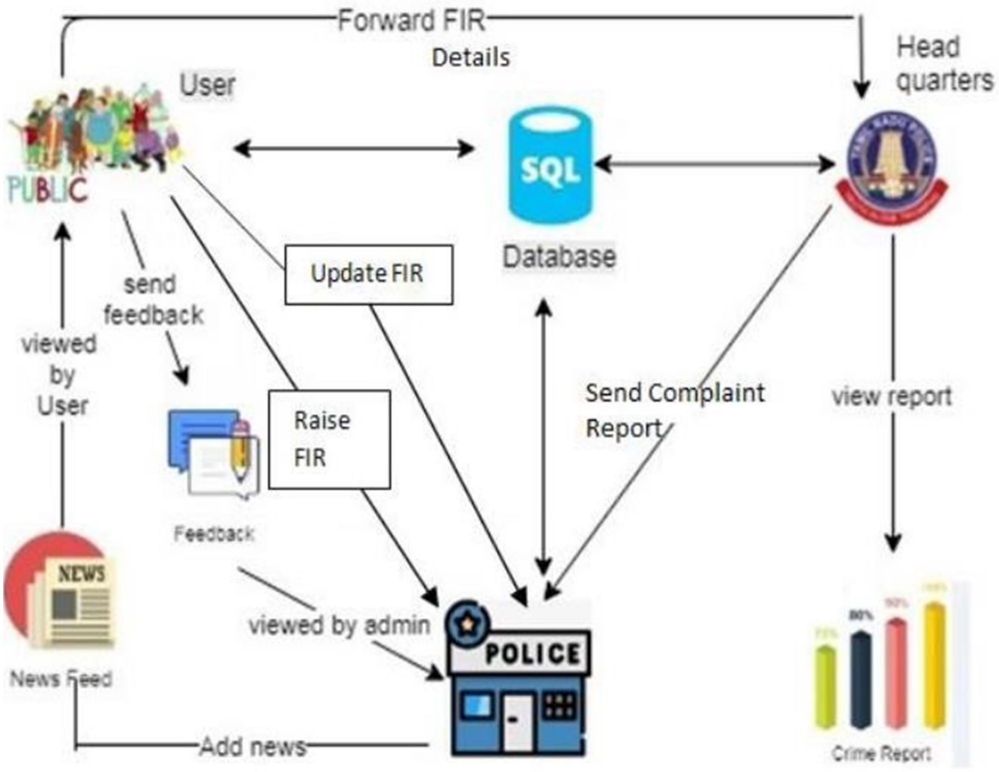


FIG 4.1: System Architecture Diagram

TESTING

White Box Testing

White-box testing (also known as **clear box testing**, **glass box testing**, **transparent box testing**, and **structural testing**) is a method of testing software that tests internal structures or workings of an application, as opposed to its functionality (i.e. black-box testing). In white-box testing an internal perspective of the system, as well as programming skills, are used to design test cases. The tester chooses inputs to exercise paths through the code and determine the appropriate outputs. This is analogous to testing nodes in a circuit, e.g. in-circuit testing (ICT).

While white-box testing can be applied at the unit, integration and system levels of the software testing process, it is usually done at the unit level. It can test paths within a unit, paths between units during integration, and between subsystems during a system–level test. Though this method of test design can uncover many errors or problems, it might not detect unimplemented parts of the specification or missing requirements. White-box test design techniques include:

- Control flow testing
- Data flow testing
- Branch testing
- Path testing

- Statement coverage
- Decision coverage

White-box testing is a method of testing the application at the level of the source code. The test cases are derived through the use of the design techniques mentioned above: control flow testing, data flow testing, branch testing, path testing, statement coverage and decision coverage as well as modified condition/decision coverage. White-box testing is the use of these techniques as guidelines to create an error free environment by examining any fragile code.

These White-box testing techniques are the building blocks of white-box testing, whose essence is the careful testing of the application at the source code level to prevent any hidden errors later on. These different techniques exercise every visible path of the source code to minimize errors and create an error-free environment. The whole point of white-box testing is the ability to know which line of the code is being executed and being able to identify what the correct output should be.

Levels

1. Unit testing. White-box testing is done during unit testing to ensure that the code is working as intended, before any integration happens with previously tested code. White-box testing during unit testing catches any defects early on and aids in any defects that happen later on after the code is integrated with the rest of the application and therefore prevents any type of errors later on.
2. Integration testing. White-box testing at this level are written to test the interactions of each interface with each other. The Unit level testing made sure that each code was tested and working accordingly in an isolated environment and integration examines the correctness of the behaviour in an open environment through the use of white-box testing for any interactions of interfaces that are known to the programmer.
3. Regression testing. White-box testing during regression testing is the use of recycled white-box test cases at the unit and integration testing levels.

White-box testing's basic procedures involve the understanding of the source code that you are testing at a deep level to be able to test them. The programmer must have a deep understanding of the application to know what kinds of test cases to create so that every visible path is exercised for testing. Once the source code is understood then the source code can be analysed for test cases to be created. These are the three basic steps that white-box testing takes in order to create test cases:

1. Input, involves different types of requirements, functional specifications, detailed designing of documents, proper source code, security specifications. This is the preparation stage of white-box testing to layout all of the basic information.
2. Processing Unit, involves performing risk analysis to guide whole testing process, proper test plan, execute test cases and communicate results. This is the phase of building test cases to make sure they thoroughly test the application the given results are recorded accordingly.
3. Output, prepare final report that encompasses all of the above preparations and results.

Black Box Testing

Black-box testing is a method of software testing that examines the functionality of an application (e.g. what the software does) without peering into its internal structures or workings (see white-box testing). This method of test can be applied to virtually every level of software testing: unit, integration,system and acceptance. It typically comprises most if not all higher level testing, but can also dominate unit testing as well

Test procedures

Specific knowledge of the application's code/internal structure and programming knowledge in general is not required. The tester is aware of *what* the software is supposed to do but is not aware of *how* it does it. For instance, the tester is aware that a particular input returns a certain, invariable output but is not aware of *how* the software produces the output in the first place.

Test cases

Test cases are built around specifications and requirements, i.e., what the application is supposed to do. Test cases are generally derived from external descriptions of the software, including specifications, requirements and design parameters. Although the tests used are primarily *functional* in nature, *non-functional* tests may also be used. The test designer selects both valid and invalid inputs and determines the correct output without any knowledge of the test object's internal structure.

Test design techniques

Typical black-box test design techniques include:

- Decision table testing
- All-pairs testing
- State transition tables
- Equivalence partitioning
- Boundary value analysis

Unit testing

In computer programming, unit testing is a method by which individual units of source code, sets of one or more computer program modules together with associated control data, usage procedures, and operating procedures are tested to determine if they are fit for use. Intuitively, one can view a unit as the smallest testable part of an application. In procedural programming, a unit could be an entire module, but is more commonly an individual function or procedure. In object-oriented programming, a unit is often an entire interface, such as a class, but could be an individual method. Unit tests are created by programmers or occasionally by white box testers during the development process.

Ideally, each test case is independent from the others. Substitutes such as method stubs, mock objects, fakes, and test harnesses can be used to assist testing a module in isolation. Unit tests are typically written and run by software developers to ensure that code meets its design and behaves as intended. Its implementation can vary from being very manual (pencil and paper)to being formalized as part of build automation.

Testing will not catch every error in the program, since it cannot evaluate every execution path in any but the most trivial programs. The same is true for unit testing.

Unit testing should be done in conjunction with other software testing activities, as they can only show the presence or absence of particular errors; they cannot prove a complete absence of errors. In order to

guarantee correct behaviour for every execution path and every possible input, and ensure the absence of errors, other techniques are required, namely the application of formal methods to proving that a software component has no unexpected behaviour.

Software testing is a combinatorial problem. For example, every Boolean decision statement requires at least two tests: one with an outcome of "true" and one with an outcome of "false". As a result, for every line of code written, programmers often need 3 to 5 lines of test code.

Another challenge related to writing the unit tests is the difficulty of setting up realistic and useful tests. It is necessary to create relevant initial conditions so the part of the application being tested behaves like part of the complete system. If these initial conditions are not set correctly, the test will not be exercising the code in a realistic context, which diminishes the value and accuracy of unit test results.

To obtain the intended benefits from unit testing, rigorous discipline is needed throughout the software development process. It is essential to keep careful records not only of the tests that have been performed, but also of all changes that have been made to the source code of this or any other unit in the software. Use of a version control system is essential. If a later version of the unit fails a particular test that it had previously passed, the version-control software can provide a list of the source code changes (if any) that have been applied to the unit since that time.

It is also essential to implement a sustainable process for ensuring that test case failures are reviewed daily and addressed immediately if such a process is not implemented and ingrained into the team's workflow, the application will evolve out of sync with the unit test suite, increasing false positives and reducing the effectiveness of the test suite.

Unit testing embedded system software presents a unique challenge: Since the software is being developed on a different platform than the one it will eventually run on, you cannot readily run a test program in the actual deployment environment, as is possible with desktop programs.[7]

Functional testing

Functional testing is a quality assurance (QA) process and a type of black box testing that bases its test cases on the specifications of the software component under test. Functions are tested by feeding them input and examining the output, and internal program structure is rarely considered (not like in white-box testing). Functional Testing usually describes *what* the system does.

Functional testing differs from system testing in that functional testing "*verifies* a program by checking it against ... design document(s) or specification(s)".

Functional testing typically involves five steps .The identification of functions that the software is expected to perform

1. The creation of input data based on the function's specifications
2. The determination of output based on the function's specifications
3. The execution of the test case
4. The comparison of actual and expected outputs

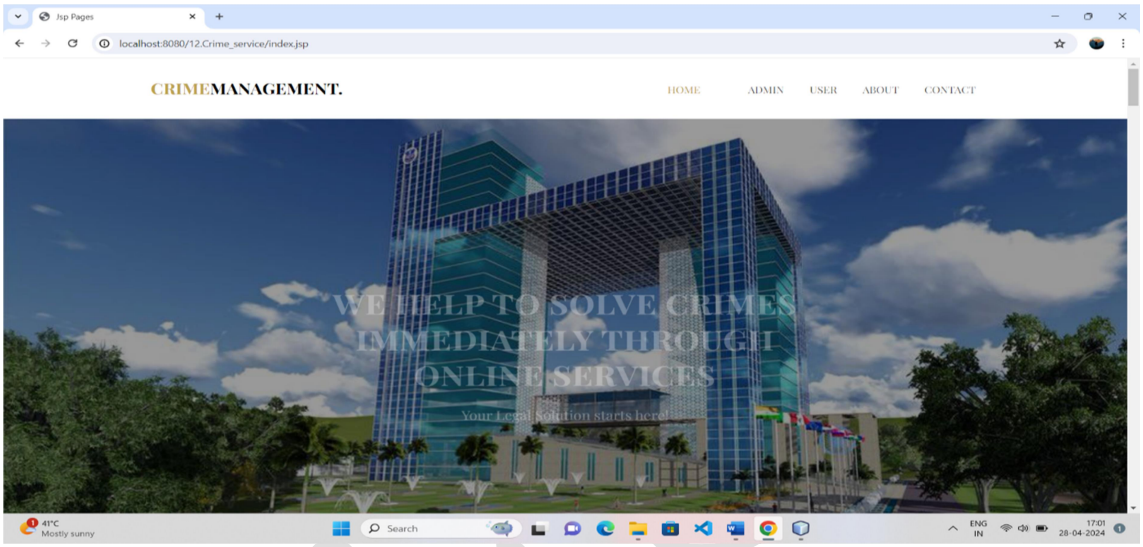
Performance testing

In software engineering, **performance testing** is in general testing performed to determine how a system performs in terms of responsiveness and stability under a particular workload. It can also serve to

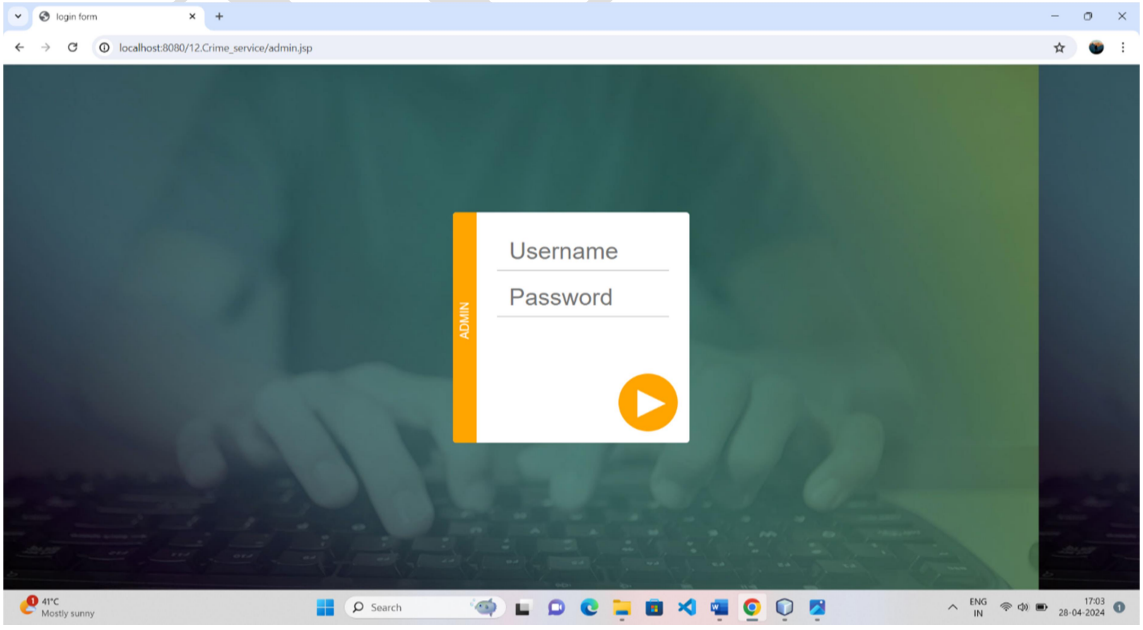
investigate, measure, validate or verify other quality attributes of the system, such as scalability, reliability and resource usage.

Performance testing is a subset of performance engineering, an emerging computer science practice which strives to build performance into the implementation, design and architecture of a system.

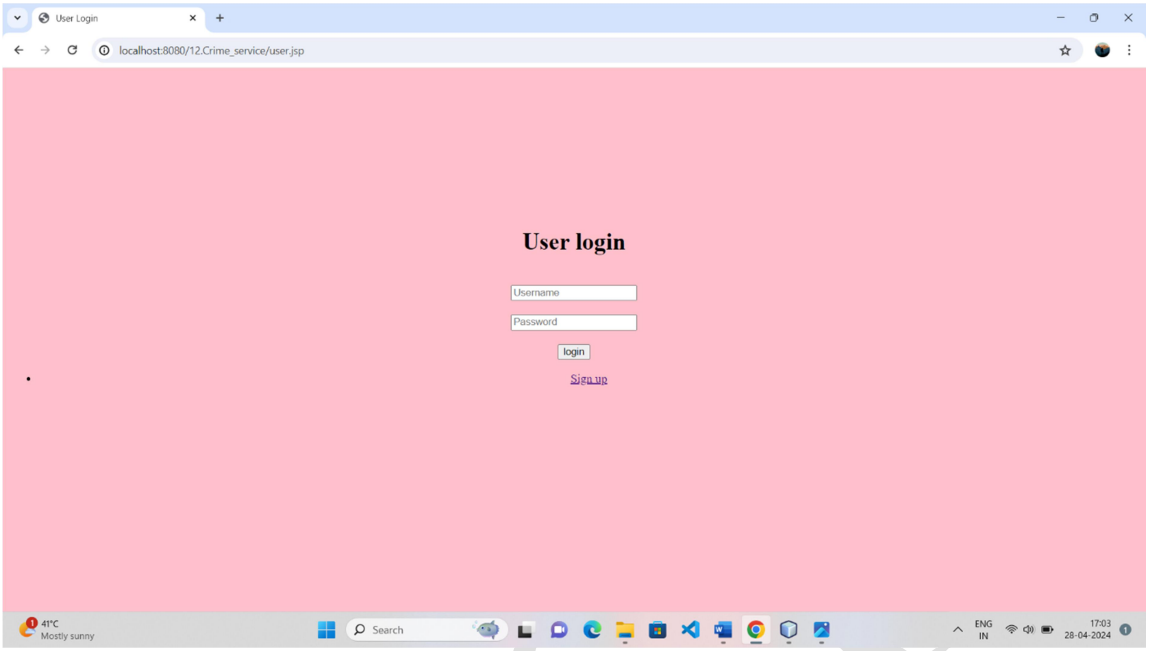
OUTPUT SCREENS



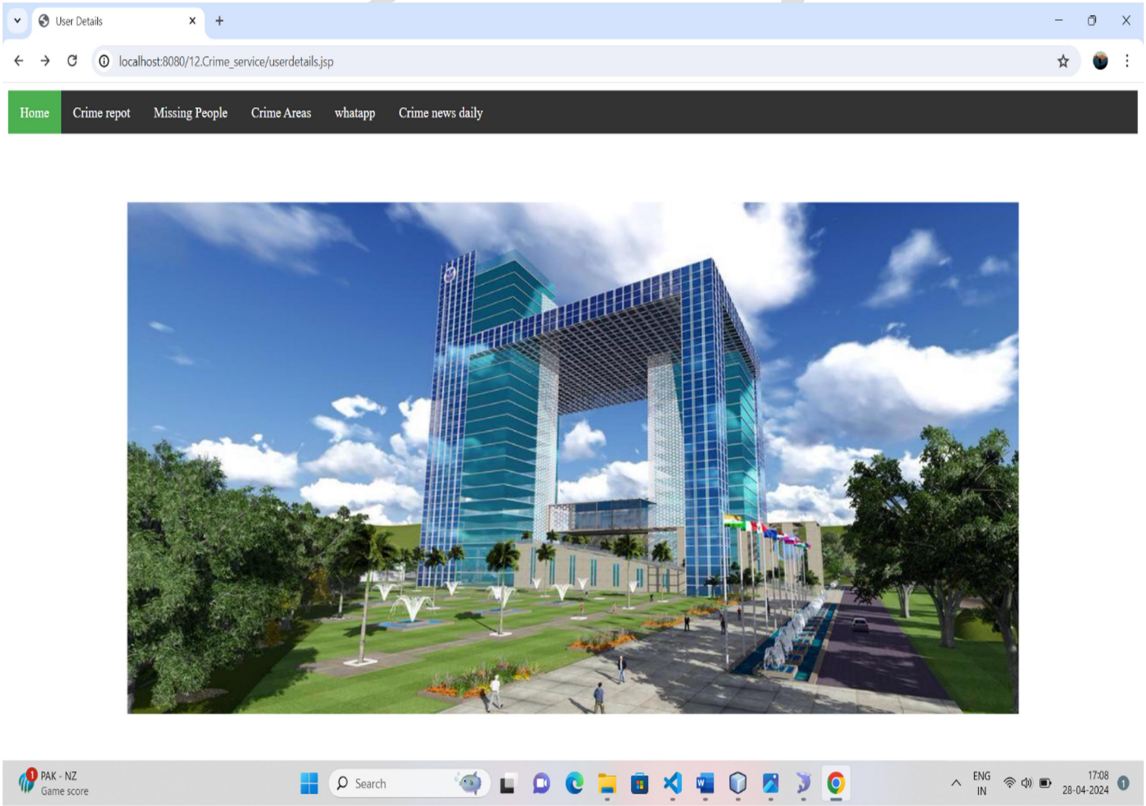
Crime Management webpage.



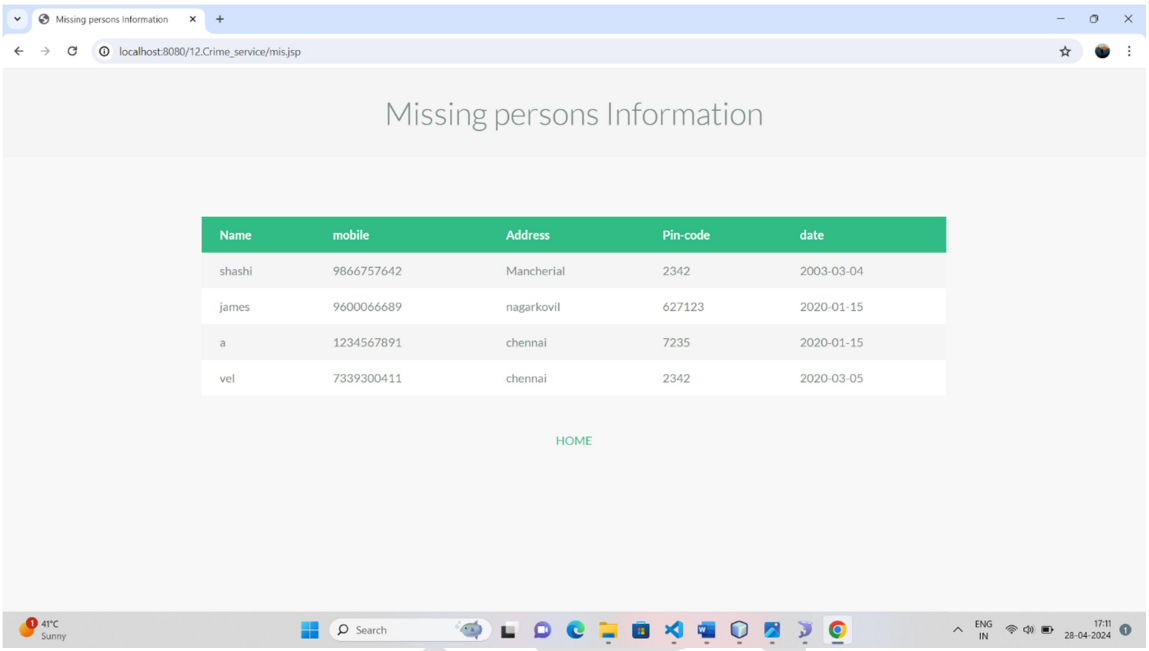
Admin Page.



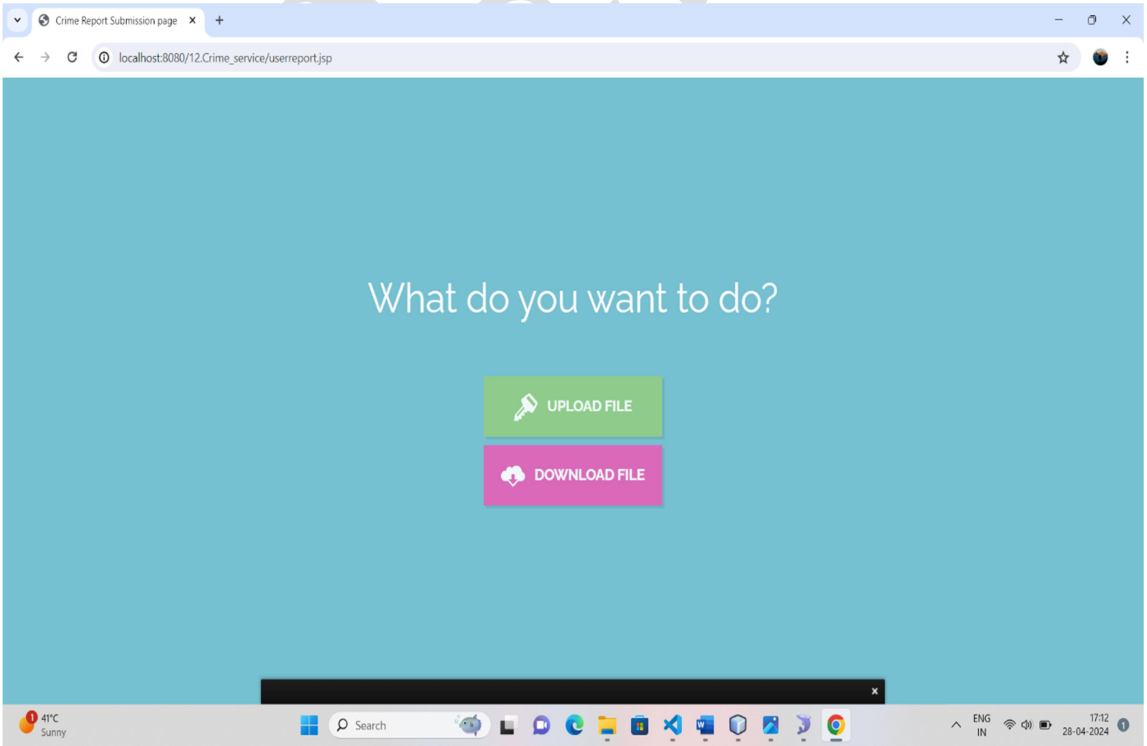
User login Page.



User Home page.



Missing person Information.



Crime Report Submission page.

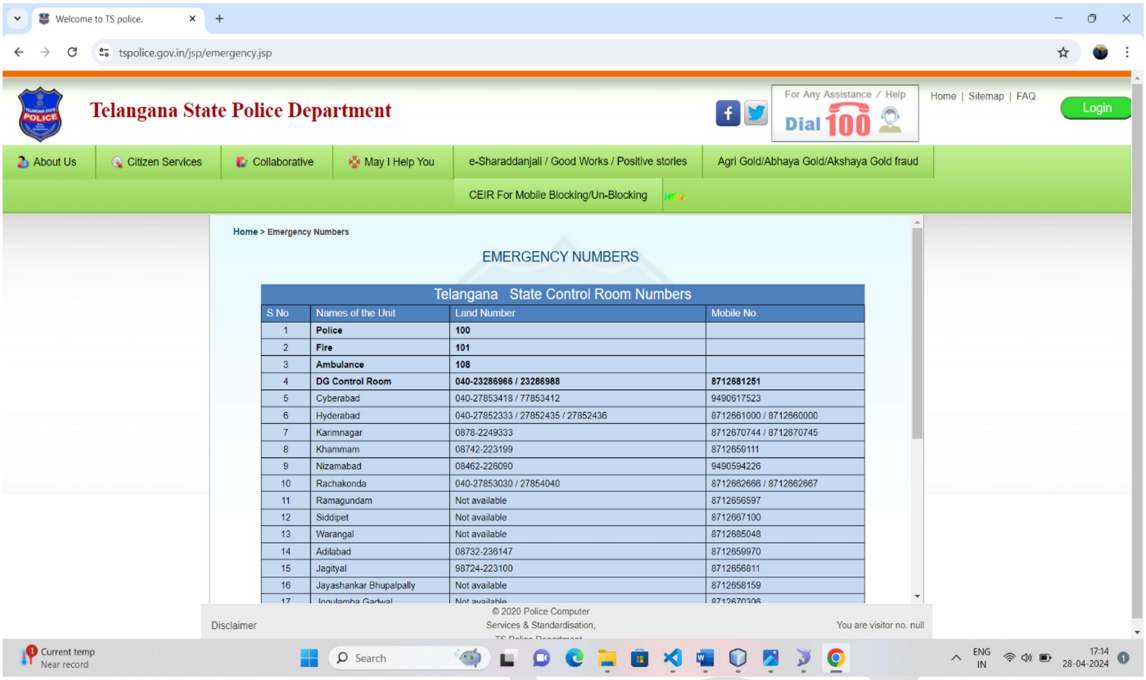


Fig 2 Emergency Services Numbers.

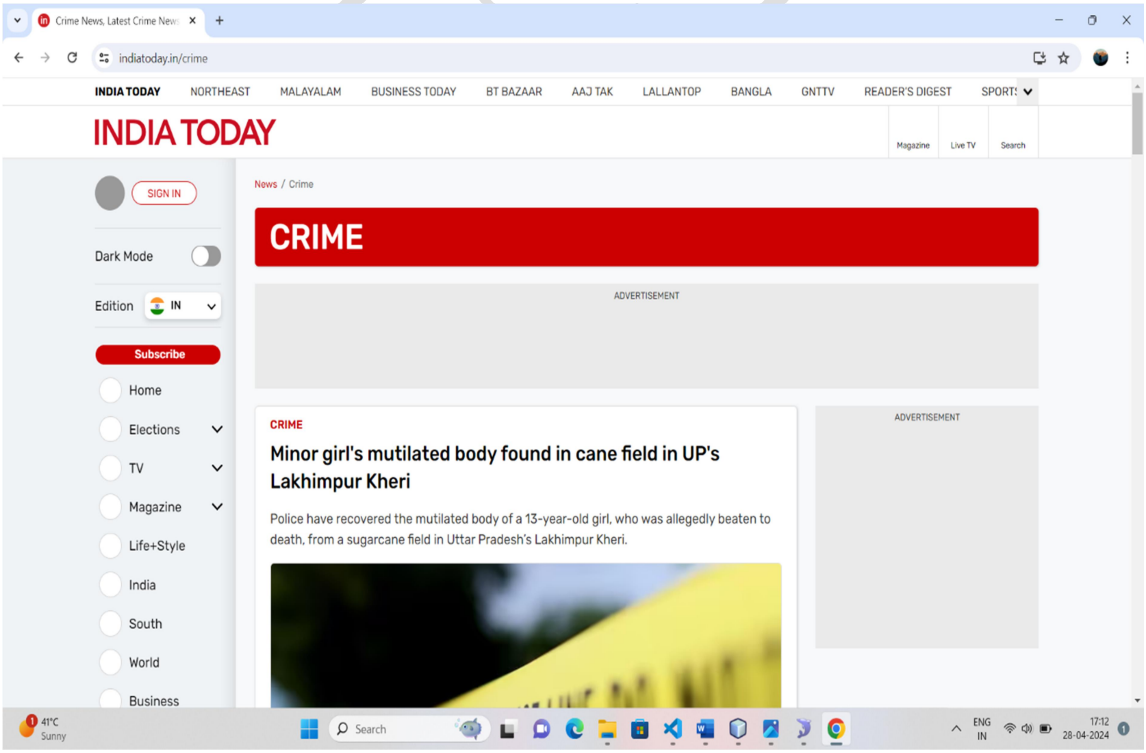


Fig 3 India Today Crime News.

CONCULSION

Building safer cities for women requires holistic measures for crime prevention, analysis, and response. This will be effective only with the understanding of various socio-economic factors that lead to violence against women so that effective measures for social reforms can be designed. Also, tech-logical interventions will not be effective in providing timely help if only law enforcement agencies or personal contacts are involved in rescue and response. The work presented in this paper describes the holistic framework for crime prevention, response, and analysis with emphasis on women safety using technology and societal participation. The Integrated system offers the components WebGIS,including the geospatial database storing criminal records and for hotspot generation, analysis, and visualization. Mobile Application for raising alerts and enabling tracking of the person in danger, viewing the crime hotspots in the locality to enable taking precautionary measures. The mobile application is designed to ensure that the registered users receive alerts about the person in danger in the locality. The user can commit to approaching the person in danger after which both the user and person in danger can be recorded and monitored by the system administrator. (3) A cost-effective wearable gadget with GPS/GSM/GPRS for raising alerts and can be used as a standalone device even when the smart phones not active. The administrator can also update the crime data to the geospatial database through the website. Based on the analysis, Inverse Distance Weighted was selected as a suitable interpolation technique for the thematic mapping of socio-economic causes of crime.

REFERENCES

1. UN News. Violence Against Women a Barrier to Peaceful Future for All. Accessed: Jun. 15, 2020. [Online]. Available: https://news. un.org/en/story/2019/11/1052131
2. 10 Safety Apps for Women. Accessed: Jun. 16, 2020. [Online]. Available: http://www.businessworld.in/article/10-Safety-Apps-For-Women/12-06- 2018-151793/
3. Orange the World—Apps for Women's Safety in India. Accessed: Jun. 15, 2020. [Online]. Available: https://thecsrjournal.in/orange-theworld-apps-for-womens-safetyin-india.
4. Lal, Divya & Abidin, Adiba & Garg, Naveen & Deep, Vikas. (2016). Advanced Immediate Crime Reporting to Police in India. Procedia Computer Science. 85. 543-549. 10.1016/j.procs.2016.05.216.
5. A. Khan, A. Singh, A. Chauhan, A. Gupta, CRIME MANAGEMENT SYSTEM, International Research Journal of Engineering and Technology (IRJET), Volume: 06 Issue: 04 | Apr 2019
6. Dr. Shaik Mahammad Rasool, Mohd Fardeen Baig, Geda Sudheer,Fuzail Mujahid, High Sensitive Alcohol Detector, International Journal of Multidisciplinary Engineering in Current Research - IJMEC Volume 8, Issue 1, January-2023, http://ijmec.com/, ISSN: 2456-4265.
7. Dr.Altaf C , Shahrukh Khan , Md.Uzair Jaffer , Md.Wajid, Fire Alarm Circuit, International Journal of Multidisciplinary Engineering in Current Research - IJMEC Volume 8, Issue 1, January-2023, http://ijmec.com/, ISSN: 2456-4265.
8. Dr. K. Shashidhar, B Benhur, Khaja Moinuddin, Rizwan Ahmad, Design And Implementation Of Iot Based Smart Health Care Monitoring System, International Journal of Multidisciplinary

Engineering in Current Research - IJMEC Volume 8, Issue 1, January-2023, http://ijmec.com/, ISSN: 2456-4265.

9. Mrs. Sharea takreem, syed junaid, Syed hasan noori, syed junaid**,** IOT based speed control of the AC motor control and security using OTP, International Journal of Multidisciplinary Engineering in Current Research - IJMEC Volume 8, Issue 1, January-2023, http://ijmec.com/, ISSN: 2456-4265.
10. Mr. Saiful Islam, Shaik Aman, Ibrahim Naushad, Rahmath Baig**,** TRAFFIC CONTROLLER BASED ON RF, International Journal of Multidisciplinary Engineering in Current Research - IJMEC Volume 8, Issue 1, January-2023, http://ijmec.com/, ISSN: 2456-4265.
11. R. S. B. Krishna, B. Bharathi, M. U. Ahamed. A and B. Ankayarkanni, "Hybrid Method for Moving Object Exploration in Video Surveillance," 2019 International Conference on Computational Intelligence and Knowledge Economy (ICCIKE), Dubai, United Arab Emirates, 2019, pp. 773-778, Doi: 10.1109/ICCIKE47802.2019.9004330.
12. A. Jesu doss, M.J. Daniel, J.J. Richard, Intelligent medicine management system and surveillance in IoT environment, in IOP Conference Series: Materials Science and Engineering, vol. 590, no. 1 (IOP Publishing, UK, 2019), p. 012005
13. Kalaiarasi, G. & K K, Thyagarajan. (2019). Clustering of near duplicate images using bundled features. Cluster Computing. 22. 10.1007/s10586-017-1539-3.
14. P. Yugandhar, B. Muni Archana, Crime reporting system. Int. J. Innovative Res.Technol. 4(11), 1745–748 (2020)
15. J. Refonaa, G.G. Sebastian, D. Ramanan, M. Lakshmi, Effective identification of black money and fake currency using NFC, IoT and android, in 2018 International Conference on Communication, Computing and Internet of Things (IC3IoT) (IEEE, 2018), pp. 275–278