Tracing the Missing person using Artificial Intelligence

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ABSTRACT:

Uncountable numbers of reported missing children in India occur each year. A significant portion of missing children have not been found. In this work, face recognition is used in a novel way to identify the reported missing child from the large number of child photographs that are accessible. The general public is able to post images of children that appear suspicious along with descriptions of nearby landmarks. The image will automatically be compared to the recorded images contained in the database are those of the lost child. The missing child database photo that most closely resembles the input child image is selected after categorizing the input child image. Using a facial image supplied by the public, a deep learning model is trained to accurately identify the missing child from the missing child image database. Face recognition is done using Convolutional Neural Networks (CNN), a relatively efficient deep learning technique for image-based applications. Using the VGG-Face deep architecture pre-trained CNN model, face descriptors are derived from the images. Our technique uses convolution networks only as high-level feature extractors, as opposed to typical deep learning applications, and the trained KNN classifier performs the child recognition. By selecting and appropriately training the top CNN model for face recognition, VGG-Face, A deep learning model that is resistant to noise, lighting, contrast, occlusion, image pose, and child age is what we are able to achieve. This model outperforms earlier approaches in the identification of missing children based on face recognition.

KEYWORDS: CNN, KNN, Missing Person, Face Recognition

I. INTRODUCTION:

Every country's greatest resource is its children. Any nation's future is dependent on how well its children are raised. India, which has the second-highest population in the world,has a high proportion of children as its citizens. But tragically, a huge number of children disappear in India every year for a variety of reasons, including kidnapping or abduction, runaways, child trafficking, and misplaced children. It is quite alarming that half of the 174 children who go missing on average each day in India remain unaccounted for. There are many different ways that children who vanish may be abused. According to a National Crime Records Bureau (NCRB) report that the Ministry of Home Affairs (MHA) referenced in Parliament, more than one lakh children (1,11,569 in total) had been reported missing up until 2016, and 55,625 of them were still missing at the end of the year (LS Q no. 3928, 20-03-2018). The true number of missing children, according to some organizations, is much higher than what is reported. For a variety of reasons, people who are missing in one area could turn up in another area or state. It is therefore challenging to identify a child from the reported missing instances even if they are discovered. This study describes a structure and process for creating an aid for locating missing children. It is suggested to have a virtual area so that the most recent pictures of kids that parents provided . Upon being reported, missing person instances are kept in a database. The public is permitted to voluntarily take pictures of kids in apparently hazardous situations and submit them on that website. This image will be automatically found in the application's database of missing child case photographs. The cops can now find the child anywhere in India thanks to this.

II. LITERATURE SURVEY

Zhongfei Zhang, R.K. Srihari, and A. Rao .[1] In this paper, a face detection approach is presented, along with some image retrieval uses for it. Although having low detection rates and somewhat high false positive rates, it has been shown that this face detection method can be employed effectively in photo retrieval in a few particular application domains (as compared to the dedicated face identification systems in the literature of image understanding). Two specific uses are demonstrated: one makes use of face detection in tandem with indexed

collateral text to extract people's features, while the other combines detection and identification with traditional similarity matching algorithms to retrieve images of objects that have a similar background.

Yap-Peng Tan and Ji Tao [2] In this article, we provide a novel method for automatically identifying and grouping human faces in videos. Human faces that occur repeatedly in each video clip are first linked together to create face sequences. For ease of comparison, we divide the face sequences into subsequences of related postures rather than directly matching them. The obtained face subsequences can then be clustered using the affinity matrix and graph partitioning. Nevertheless, domain information must first be incorporated into a set of constraints before it can be added to the graph. Additionally, in order to properly take use of the space-level implications of these constraints, we suggest a constraint propagation technique.

Shigeo Kaneda, Hirohide Haga, and Ryo Ariizumi [3] Thermal power plants, which produce energy while emitting carbon dioxide (CO2), provide a significant portion of the world's electric power. As we use so much electricity nowadays, we are at risk from environmental issues like global warming. The creation of energy-saving appliances is one of the important components to fixing these issues. The brightness of the screen of televisions, which are commonly used in homes, can be decreased to save energy. Yet, the TV keeps its brightness unless a user makes a change. To adjust the TV's brightness, a homemade signal transmitter and receiver were also employed. We were able to verify a 30% reduction of the TV's watt-hours through an experiment with the prototype system.

III. METHODOLOGY:

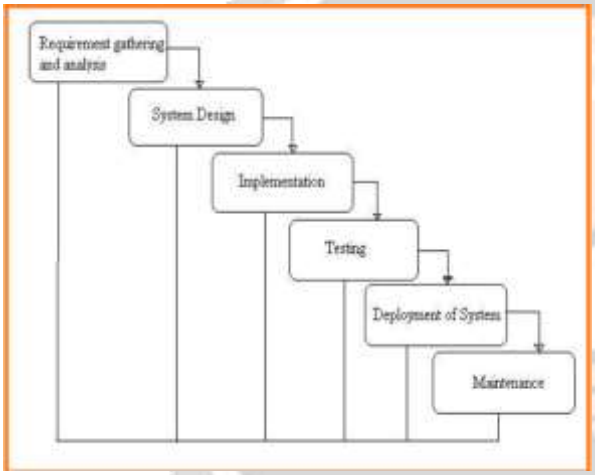

Fig1 System Analysis Methodology

- Requirements
- System Design
- Practical Implementation
- Manual Testing
- Deployment of System
- Maintenance

Requisites Accumulating and Analysis

When we are on academic leave to gather the project's requirements, it is the first and most crucial stage of any project. We collected several IEEE relegated papers, followed IEEE journals, and finally culled a paper titled "Individual web revisitation by setting and substance importance input and for analysis stage we took referees from the paper and did literature survey of some papers."

System Design

The three basic subcategories of system design are class diagrams, UML design, and GUI design. The first category allows for the easy development of projects by providing actors and their utilizers with case-by-case diagrams, sequences for the project's flow, and information concerning the different project classes and their associated procedures. This is how it will be useable if our project needs to use UML. Data base design is the third and last stage of system design for the project, when we attempt to build a database depending on the number of modules in our project.

Implementation

The phase of implementation is where we attempt to put the design work into action. During this stage, which is the most crucial and crucial part of the project, the majority of the business logic coding is used.

Testing

Unit Testing

Every stage of the project is completed by the developer themselves, and they are also responsible for fine-tuning bugs and module dependencies. It is only here that we will address any runtime faults.

Manual Testing

This manual testing is carried out using trial-and-error techniques.

Deployment of System

In this Phase, it will deploy the client system in the real world once the project is finished. We recently installed the client system in our college lab during the break, complete with Windows OS and all necessary software.

Maintenance

This project's maintenance is a one-time activity only.

IV. EXISTING SYSTEM:

Police departments get many reports of missing children. For a variety of circumstances, a child reported missing from one area may turn up in another area or another state. It is therefore challenging to identify a child from the reported missing instances even if they are discovered. In this paper, a structure and development process for a missing kid assistance tool are presented. It is suggested to have a virtual area so that the most recent pictures of kids that parents provided while reporting missing cases are preserved in a repository. There is an option for members of the public to freely take and post photos of children in allegedly dangerous settings. This image will be automatically found in the application's database of missing child case photographs. The ability to locate the child wherever in India is aided by this for the police.

V. PROPOSED SYSTEM:

This system's methodology for identifying missing children combines face feature extraction from deep learning with matching from KNN. For the purpose of identifying missing children, the suggested system uses face recognition. This is to assist law enforcement and parents in the search for a missing child.

VI. IMPLEMENTATION:

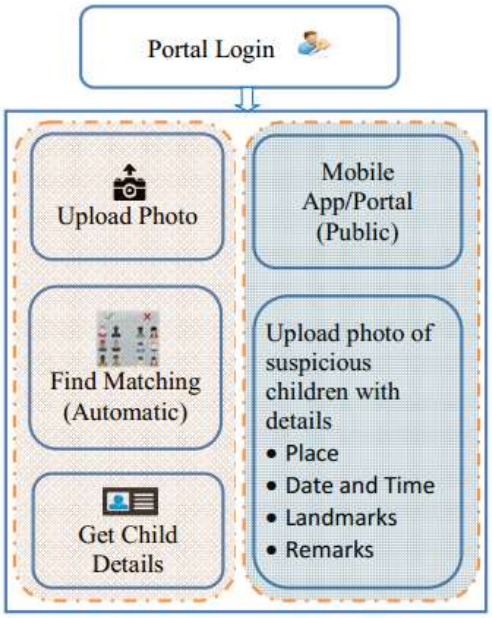

Fig 2: System Architecture

It includes a national portal for archiving data on missing children and images of them. Every time a kid disappearance is reported and a FIR is filed, the responsible official uploads the missing child's picture into the portal. The database's images of the kids can be searched by the general public to find any matching kids. The system will recommend the situations that are the most pertinent. The police can get the child's information if a match is found.

Preprocessing:
When preparing input raw photographs for face recognition, preprocessing involves separating the face region from the image and then standardising the images in a format that is suitable for the CNN architecture that is being utilised. A distinct input size is required for each CNN. The photographs of missing children, taken either with a digital camera or a mobile device, are collected and organised into individual cases for the purpose of populating the face recognition system's database with images. To obtain the input face images, the facial region of each image is recognised and cropped.

Upload Photo:
It includes a national portal for archiving data on missing children and images of them. Every time a kid disappearance is reported and a FIR is filed, the responsible official uploads the missing child's picture into the portal.The public is free to upload any suspicious child's photo together with location, time, landmarks, and comments at any time to the portal. The user's photo will immediately be compared to photos of reported missing children, and If a match is found that has a score that is high enough, a notification email will be sent to the appropriate officer. The notification will also show up in the message box on the concerned officer's login screen.

Search:
The algorithm builds a template vector of the child's facial features every time a user uploads a suspected child's photo based on the supplied image. In the event that a match is found in the database, the system presents the most appropriate image and notifies the involved officer portal by email or push notification that a match has been made. The proposed approach enables the Officer to verify for any database matching at any time by performing the same.

VII. CONCLUSION:

In the proposed missing child identification system, the strong CNN-based deep learning approach for feature extraction and the support vector machine classifier for categorising multiple child categories are coupled. Children's faces were utilised to develop the deep learning model that was applied to this system's evaluation. The VGG-Face model performed better after the softmax was removed, and CNN image attributes were isolated to train a multi class KNN.Images of children taken in various lighting and sound conditions, as well as photographs taken at various ages, are used to assess the performance of the proposed system. Since the categorization had a higher percentage of accuracy, it can be seen that the suggested facial recognition methodology can be used to confidently locate missing children.

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