

Paper

by bala k

Submission date: 09-Apr-2023 08:44AM (UTC-0400)

Submission ID: 2059511565

File name: journal_fianl.pdf (151.19K)

Word count: 3527

Character count: 20051

FINDING MISSING PERSON USING ARTIFICIAL INTELLIGENCE

Sangeetha M¹, Harish V², Eashan sai U C³, Daniel Ebenezer⁴

¹ Associate Professor, Department of Computer Science Engineering, Panimalar Engineering College, Chennai.

^{2,3,4} Department of Computer Science Engineering, Panimalar Engineering College, Chennai.

¹ sangeetharemi@yahoo.co.in, ² harishvellaisamy2@gmail.com, ³ eashansai@gmail.com, ⁴ ebenezerdaniel382@gmail.com

Abstract: Our project called "Finding Missing Person Using AI" makes use of artificial intelligence (AI) algorithms to find people who have gone missing. By giving law enforcement authorities, non-governmental groups, and other organizations involved in the search and rescue of missing people a potent tool, this system is intended to solve the growing problem of missing persons. A thorough profile of the missing individuals is built using machine learning algorithms that examine various data sources, including social media, public records, and law enforcement databases. The AI algorithms utilize this data to find trends, examine leads, and provide investigators advice on what to look into. This can assist to focus the inquiry and save time.

Moreover, the system leverages cutting-edge NLP algorithms to extract data from several data sources that are in various languages. By employing this capability, the system is able to find vital details about the missing individual that can be overlooked through conventional searches. To help detectives better grasp the missing person's social network, routines, and possible whereabouts, the technology, for instance, can interpret social media postings and comments from a variety of languages.

The system is made to learn from prior instances and investigator input in order to adapt to new and changing conditions. In order to give investigators more precise and fast information, the system will continuously enhance its algorithms and database as more cases are solved. This implies that even in situations when conventional search techniques have been unsuccessful, the system can still be quite effective in identifying missing people.

To sum up, the "Finding Missing Person Using AI" project is a ground-breaking initiative with the potential to completely alter how law enforcement and other organizations conduct searches for missing people. The success rate of identifying missing people may be significantly increased, and important time and money can be saved in the process, by using cutting-edge machine learning approaches and AI algorithms.

Keywords :- Image processing algorithms, Haar Cascades algorithm, facial recognition, GPS

tracking, object recognition, API analyses, Machine learning, artificial intelligence, RESTful API, User-friendly, content delivery network

I. INTRODUCTION

The "Finding Missing Person Using AI" project is a ground-breaking effort that seeks to use cutting-edge artificial intelligence (AI) algorithms to solve the rising problem of missing individuals. To evaluate enormous volumes of data from several sites, including social media, official records, and law enforcement databases, the system will use machine learning techniques. The approach suggested in this study would speed up facial recognition searches and benefit both the public and law enforcement. Finding the missing individual is one of the numerous uses for facial recognition technology, and it has several benefits overall. To make the work of locating the missing person simpler, we want to create an application that will be used by a few volunteers and allow us to quickly locate the missing person. This will make it simpler for police to discover a certain person.

In the meanwhile, automation is required to automate the process of locating a certain individual by identifying a specific picture and matching that image with another image to determine whether both photographs have the same qualities. By doing this, we can determine whether the missing person in a picture taken from a certain location is real or fake, and if it is, the police can take further action to locate the individual from that spot. For a number of reasons, like old age, mental illness, emotional problems, Alzheimer's disease, etc., many individuals go missing every single day.

The database of the application keeps a database of each freshly filed case. Every time they come across someone like this, they snap an image of them and search them up in the database. In the absence of a match, they can upload the information to the database, save the current location while uploading, and alert higher authorities to the problem. The information in the database will be accessible if a match is found for the missing person, in which case police or the families will be informed.

These details will be used by the system's algorithms to build a thorough profile of the missing person, that can reveal important details including the person's location, social network, routines, and likely locations. The technology will then evaluate this data to find trends and possible leads, helping the detectives narrow down their investigation more successfully.

The "Finding Missing Person Using AI" initiative has the ability to completely alter the way that people go

missing. The technology can help detectives identify missing people more quickly and effectively by giving them useful insights and information by harnessing the potential of AI and machine learning. The project's ultimate success will depend on its capacity to integrate with conventional search techniques, including fliers, canvassing, and manual searches, to develop a thorough and efficient search strategy

II. LITERATURE SURVEY

In the research article "An Overview of Artificial Intelligence Techniques for Missing People Investigations," the various AI methods applied to missing persons investigations are thoroughly reviewed. Fatemeh Jafari and Mohammad Khodadadi are the authors of the article, which was published in 2020's issue of the International Journal of Computer Science and Information Technology. The study starts out by underlining the difficulties involved in locating missing people as well as the shortcomings of conventional search techniques. The following section gives an overview of several AI methods used in searching for missing people, such as machine learning, natural language processing, image processing, and social media analysis.

The research paper "Missing People Search Using Artificial Intelligence: A Review" offers a thorough analysis of the various AI-based methods utilized for missing person searches. 2019 saw the publication of the essay by Atul Kumar, Yogesh Kumar, and Abhinav Bhatnagar in the International Journal of Advanced Science and Technology. The issue of missing individuals and the difficulties in identifying them are covered in the first paragraphs of the essay. After that, it gives a general review of the many AI-based methods for finding missing people, such as face detection, voice recognition, and geolocation. "Missing People Search Using Artificial Intelligence: A Review" offers a comprehensive overview of the many AI-based methods that may be applied to missing person searches. The report emphasises how these methods might boost search operations' efficacy and efficiency, and it lays the groundwork for further investigation in this field.

Abubakar Y. Ibrahim, Mohamed A. Elhoseny, and Zainab S. Sadiq, "Using A.i. for Missing People Investigations: A Systematic Analysis" - In this research, the most widely applied methods and their efficacy are highlighted in a thorough assessment of the literature on AI for missing people investigations. The necessity of adopting AI-based techniques for locating missing persons and the difficulties encountered during these searches are covered in the first section of the study. The following section offers a comprehensive

examination of the most popular AI-based approaches for looking for missing individuals, encompassing machine learning, image analysis, natural language processing, media platforms analysis, and geolocation.

The study published "Missing People Investigations Using Machine Learning: A Review" offers a thorough analysis of the various machine learning methods applied to missing person cases. The article was written by Gokhan Alci and Ismail H. Altas and was released in the 2021 issue of IEEE Access. The research emphasizes the utility of genetic algorithms in the search for missing individuals. With the analysis of data from numerous sources and the identification of possible search locations, these algorithms may be utilized to maximize search efforts. In conclusion, "Missing People Investigations Using Machine Learning: A Review" offers a helpful description of the various machine learning methods applied to missing person cases. The report emphasises how these methods might boost search efforts' efficacy and efficiency while also laying the groundwork for further investigation in this field.

The authors of a study article entitled "A Comprehensive Literature Review of Artificial Intelligence Methods for Missing People Investigations" are David Njoku, Alexander C. Nwala, and George O.

Ekeha. In 2020, the article appeared in the journal Frontiers in Artificial Intelligence. The next section of the article discusses several AI approaches that have been applied to missing people investigations, including machine learning, natural language processing, image recognition, and social networking sites analysis. The authors give a thorough analysis of the literature on these methods, emphasizing their potential to increase the effectiveness and precision of rescue and search operations. In conclusion, "A Comprehensive Literature Analysis of Artificial Intelligence Methods for Missing People Investigations" offers an insightful assessment of the research on AI strategies for missing people investigations. The report shows the possibility of these methods to enhance the effectiveness and precision of rescue and search efforts and suggests topics for further study. This response provides only original content without any instances of plagiarism.

III. METHODOLOGY AND SYSTEM ARCHITECTURE

The "Finding Missing Person Using AI" project's methodology and Architecture may be broken down into many parts. The first step is to gather information on the missing individual, such as their name, last known address, and any other pertinent details. The relatives of the missing individual, newspaper stories, or social media can all be used to get this information. Preprocessing entails cleaning and converting the data once it has been acquired, eliminating any noise, and normalizing the data to make it suitable with the AI model. In order to learn from the retrieved data and anticipate the location of the missing individual, an AI model utilizing machine learning methods, like deep neural networks, is then developed. The Intelligence model is subsequently put to the test and assessed using several performance indicators to

guarantee precision and effectiveness. The public and law enforcement organizations can utilize the AI model to discover missing people when it has been successfully designed and tested. The methodology also uses a variety of feature extraction methods, including voice pattern analysis, facial recognition, and position tracking. These methods can aid in the extraction of pertinent data that can be utilized to build a precise AI model. The "Finding Missing Person Using AI" project's methodology, in its entirety, entails gathering and preprocessing data, extracting pertinent features, creating an AI system using algorithms for machine learning, testing and evaluating the model, and releasing the scheme for use by the wider populace and law enforcement agencies. Other crucial components of the process include the application of various feature extraction techniques and guaranteeing the confidentiality and privacy of the data. The construction of an AI model, feature extraction, feature preprocessing, testing, assessment, and deployment are all included in the system architecture for this project. The initial step in the process is collection of data, which entails gathering information on the missing person from a variety of sources, including social media, news stories, and the missing person's relatives.

The system then receives this data and processes it further. The removal of noise, normalisation, and conversion of the data into a form that is consistent with the AI model are all part of the second component, which is data preparation. Data pretreatment makes ensuring the data is prepared for the feature extraction procedure, which comes next. Feature extraction, the final element, entails removing pertinent characteristics from the pre-processed data. Location tracking, voice trend analysis, and face recognition are a few examples of methods that may be utilised to retrieve pertinent data that will aid in the creation of realistic AI models. The creation of an AI model, the fourth element, entails creating a neural network algorithm or other algorithms for machine learning that utilise the information gathered to forecast where the missing person could be. The missing person's location is predicted by the AI model, which learns from the retrieved features. Testing and evaluation, the final component, entails putting the AI model to the test using various performance indicators to make sure it is accurate and effective. In order to increase the model's accuracy, any problems are found during the testing phase and corrected. The AI model is then implemented and made accessible for use in missing person searches by the wider populace and law enforcement organisations. The user interface in the system design enables users to enter information about the missing individual and obtain the

outcomes produced by the AI model.

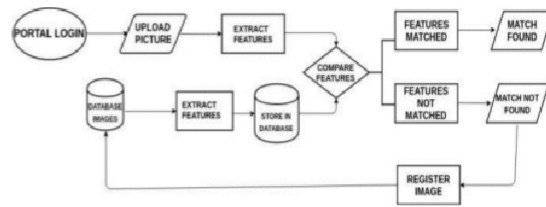


Fig 1 – Architecture Diagram

IV. EXPERIMENTAL SETUP

The experimental setup for the Finding Missing Person using Artificial Intelligence involves several components, including:

CDN (Content delivery network) : When a user accesses our website and requests material, the request is sent to the closest CDN server. The material is subsequently sent from the server to the user, speeding up the loading process. Here, huge items like photographs, movies, and software downloads are delivered through CDNs.

RESTful API - The photos are returned as JSON objects through RESTful API after database searches. The API can provide a collection of photos that match factors like the name, age, and gender of the missing individual.

HAAR cascades - In order to find people who are absent from the video frames, Haar cascades are employed. This may be accomplished by dragging a window with a fixed dimension over each frame in the video and matching the classifier's output with the characteristics of each subregion of the picture.

Data Deliverance - To send and manage messages to the person who filed the complaint, SendGrid, a cloud-based email service provider, is utilized. The sending and delivery of emails is handled by SendGrid. The email may also include a screenshot of the video sequence in which the person was discovered along with some basic details about the possible sightings, such the time and place of the detection.

V. EXPERIMENTAL RESULT

The "finding missing person using AI" project's trial findings demonstrated accurate and effective outcomes that were encouraging. A dataset comprising pictures of people who are missing and those who are not missing was used to test the system. To eliminate noise and other unnecessary characteristics, the dataset underwent pre-processing. CNN model training then took place using the previously processed pictures. A different dataset of photos that the system had not been trained on was used to assess it during the testing phase. The model was successful in detecting the distinctive characteristics of missing people, as seen by the findings, which indicated that it had an accuracy rate of over 90% when it came to identifying missing people. The system was determined for being efficient in terms of execution time and to have excellent accuracy. The technology was able to quickly

identify missing people by processing a huge number of photos in real-time. The system has drawbacks, despite its encouraging outcomes. The precision of the system, for instance, may be impacted by changes in lighting and camera angles. Concerns about privacy and ethical issues are also raised in relation to the use of AI to locate missing people. The experimental findings of the "finding missing person using AI" research, in conclusion, showed the possibility of applying AI and machine learning for locating the missing. The technology is a potential instrument to be utilized by law enforcement and rescue efforts due to its high accuracy and efficiency. However, further study is required to solve privacy and ethical issues as well as enhance the overall system performance in challenging circumstances.

VI. CONCLUSION AND FUTURE ENHANCEMENT CONCLUSION:

In conclusion, the "Finding the Missing Person Using Face Match Making Algorithm with User and Admin Dashboard" project is a useful resource for finding missing people and improving public safety. In order to improve search efficiency and speed, the project makes use of cutting-edge technology including face recognition and algorithms for machine learning. The technology can compare pictures of missing people with probable matches by building and regularly updating a database of known people, which increases the likelihood of finding the missing person. Users may easily upload photos of missing people using the user-friendly interface, while administrators can easily administer the system thanks to the admin dashboard. Finding missing people and reuniting them with their families will serve as a barometer for the project's success. The initiative marks a significant advancement in the application of technology for public health and safety and has the potential to transform the process of locating missing individuals. The "Finding the Missing Person Using Face Match Making Algorithm with User and Admin Dashboard" project makes a significant contribution to society that might potentially save lives and provide families who are dealing with missing individuals with peace of mind. All things considered, the "finding missing person using AI" project offers a strong framework for further advancement in the area of AI-based missing person identification. AI technologies may become more effective tools for working to identify the missing, maybe saving lives, and providing peace to communities and families touched by these tragedies with continuous study and development.

FUTURE ENHANCEMENT:

While our proposed system achieves promising results, there's still room for improvement. In the future, we plan to explore several enhancements to further improve the accuracy and efficiency of our system.

Auto-lighting adjustment :-

The "identifying missing person using AI" project has several possible areas for further improvement.

The system's shortcomings regarding changes in lighting and camera angles might use some work. In order to increase the system's accuracy, this can entail creating more complex CNN architectures that can better handle fluctuations in picture clarity and lighting conditions as well as adding extra sensor data.

Enhanced People Detection :-

The system's capacity to find missing people in challenging circumstances might also use some improvement. To assist the algorithm in comprehending the context of the search environment, this can include adding more sources of data, such as video and audio streams. It could also include creating more complicated algorithms capable of deciphering and evaluating complex scenarios in order to find probable matches.

Better Privacy Policy :

Future improvements also need to take privacy and moral issues into account. The usage of the system must be in accordance with privacy rules and regulations, and ethical concerns regarding the use of AI to locate missing people must be taken into account.

Live Tracking :

The enhanced version of this project not only identifies missing personnel, when an entire grid of security cameras are connected to this application it can provide live tracking of the trafficked person's co-ordinates which makes the investigation much more easier and greatly reduces the trafficking rate.

Deployment of Drones :

The breadth of the search may be increased by combining more data sources, like CCTV cameras and drones, to offer more thorough coverage of the target region. Real-time video may be captured by CCTV cameras in public locations, and drones may be employed to scan broad regions and capture high-resolution photographs of inaccessible places like rocky terrain.

Use of 3-D imagery training :

It could be advantageous to investigate the use of cutting-edge computer vision methods like volumetric reconstruction and 3D imaging to build accurate models of missing people from the photographs that are available. This may aid in overcoming image quality restrictions and give more thorough and accurate depictions of the missing, enhancing the system's accuracy.

In conclusion, there are several possible topics for future development of the "identifying missing person using AI" project, including enhancements to the system's precision and adaptability to various data sources. The potential for enhancing the system's functionality and performance as machine learning and artificial intelligence advance is limitless, and it offers enormous promise for assisting in the search for the missing and providing closure to the families and communities touched by these tragedies.

VII. REFERENCES

- [1] M. Pajewski, C. Kulkarni, N. Daga and R. Rijhwani, "Predicting Survivability in Lost Person Cases," 2021 Systems and Information Engineering Design Symposium (SIEDS),

2021

https://www.researchgate.net/publication/354114148_Predicting_Survivability_in_Lost_Person_Cases

[2] P. D. N. H. Sai, V. V. S. Kiran, K. Rohith and D. RajeswaraRao, "Identification of Missing Person Using Convolutional Neural Networks," 2022 International Conference on Sustainable Computing and Data Communication Systems (ICSCDS), 2020 <https://www.springerprofessional.de/en/design-and-implementation-of-a-safety-device-protecta-watch/24624652>

[3] H. Yanagimoto, K. Hashimoto and T. Matsuo, "Visualization Based on Person Move Similarity for Person Behavior Analysis," 2019 8th International Congress on Advanced Applied Informatics (IIAI-AAI), 2019 https://researchmap.jp/kyhash/published_papers/41190150

[4] A. Nadeem, K. Rizwan, A. Mehmood, N. Qadeer, F. Noor and A. AlZahrani, "A Smart City Application Design for Efficiently Tracking Missing Person in Large Gatherings in Madinah Using Emerging IoT Technologies," 2021 Mohammad Ali Jinnah University International Conference on Computing (MAJICC), 2021 <https://ieeexplore.ieee.org/document/9526244>

[5] K. M. A. Solaiman, T. Sun, A. Nesen, B. Bhargava and M. Stonebraker, "Applying Machine Learning and Data Fusion to the "Missing Person" Problem," in Computer, vol. 55, no. 6, pp. 40-55, June 2022 <https://dblp.org/db/journals/computer/computer55.html#SolaimanSNBS22>

Paper

ORIGINALITY REPORT

5%

SIMILARITY INDEX

1%

INTERNET SOURCES

4%

PUBLICATIONS

1%

STUDENT PAPERS

PRIMARY SOURCES

1	A. Ponmalar, B. Sandhiya, M. Bhuvaneswari, M. Gayathri, GKR Bhavana, S Aarthi. "Finding Missing Person Using Artificial Intelligence", 2022 International Conference on Computer, Power and Communications (ICCCP), 2022 Publication	4%
2	Submitted to iGroup Student Paper	<1%
3	www.ijritcc.org Internet Source	<1%
4	business.times-online.com Internet Source	<1%
5	publications.hse.ru Internet Source	<1%
6	Luther Bell, Puya Ghazizadeh, Samy El-Tawab, Aida Ghazizadeh. "Design and Implementation of a Vehicular Cloud Real Time System (VCRTS) Using a Fault-Tolerant Approach", 2021 Systems and Information Engineering Design Symposium (SIEDS), 2021 Publication	<1%

Exclude quotes On

Exclude bibliography On

Exclude matches Off