Finding the missing person using AI Technologies

# 1) INTRODUCTION

**1.1 Overview:**

A deeply disturbing fact about India’s missing children is that while on an average 174 children go missing every day, half of them remain untraceable. The National Crime Records Bureau (NCRB) report which was cited by the Ministry of Home Affairs (MHA) in the Parliament (LS Q no. 3928, 20–03–2018), more than one lakh children (1,11,569 in actual numbers) were reported to have gone missing till 2016, and 55,625 of them remained untraceable till the end of the year.

In this scenario, missing case entries are updated with their photocopies in the police station. By using CCTV cameras we can compare each person with the available database and find these people. If the missing person is found in the CCTV Video stream then location which is tagged to the CCTV is sent as an SMS to the police station.

**1.2 Purpose:**

The main purpose of this project is to develop a web application that provides Finding the missing person using AI Technologies. This project has the following key objectives and overarching goals:

**1. Enhanced Efficiency:** The primary purpose is to significantly enhance the efficiency of search and rescue operations. By utilizing AI algorithms and technologies, the project aims to reduce the time it takes to locate missing individuals, minimizing potential risks and improving the chances of a successful recovery.

2**. Improved Accuracy**: AI technologies can analyze data with precision and accuracy that may be challenging for human search teams to achieve. The project seeks to improve the accuracy of identifying potential locations, patterns, and clues that could lead to the whereabouts of the missing person.

**3. Rapid Response**: AI-powered tools, the project intends to enable rapid response to missing person cases. By quickly processing and analyzing various data sources, AI can provide immediate insights to aid search and rescue teams in their decision-making.

**4. Comprehensive Data Analysis**: The project's purpose is to harness the capabilities of AI to analyze diverse data sources, including images, videos, text, geospatial data, and more. This comprehensive analysis can unveil hidden connections, behavioral patterns, and potential leads that might not be evident through traditional methods.

**5. Technological Innovation:** The project is designed to showcase the potential of cutting-edge AI technologies in addressing critical real-world challenges. By pushing the boundaries of what AI can achieve, the project aims to inspire further innovation in the field of search and rescue.

**6. Minimized Resource Allocation:** Through AI-driven predictive analysis and data processing, the project seeks to optimize the allocation of resources such as manpower, equipment, and time. This efficient resource management can lead to cost savings and greater operational effectiveness.

**7.Multi-Modal Integration:** The purpose is to integrate various AI modalities, such as image recognition, natural language processing, and geospatial analysis, into a cohesive framework. This integration aims to provide a holistic understanding of the missing person's situation, leading to better decision-making.

**8. Increased Collaboration:** The project intends to facilitate collaboration between AI technologies and human search and rescue teams. By automating certain tasks and providing real-time insights, AI can enhance the coordination and effectiveness of all involved parties.

**9. Ethical and Privacy Considerations:** A central purpose of the project is to ensure that AI technologies are deployed responsibly and ethically. This includes safeguarding the privacy of individuals and adhering to legal and ethical guidelines while utilizing sensitive data.

**ss**: Ultimately, the overarching purpose is to have a positive impact on society by increasing the success rate of finding missing persons, reuniting families, and ensuring the safety and well-being of individuals who may be in distress.

In conclusion, the project's purpose is to leverage AI technologies to transform the way missing persons are located and rescued. By achieving greater efficiency, accuracy, and collaboration, the project strives to make a significant difference in the lives of those who are missing and their loved ones.

# 2) LITERATURE SURVEY

**2.1 Existing Problem**

Using AI technologies to address the challenge of finding missing persons represents a significant advancement in the realm of search and rescue operations. The existing problem of locating missing individuals is characterized by its complexity, time sensitivity, and the need for coordinated efforts across various agencies. Traditional search methods often rely on manpower-intensive efforts, which can be slow and inefficient, especially in vast or rugged terrains. Additionally, the success of these methods heavily depends on factors such as weather conditions, terrain, and available resources.

AI technologies offer a promising solution by harnessing the power of data analysis, machine learning, and predictive modeling. These technologies can process and analyze vast amounts of data, including digital footprints, social media activity, and historical patterns, to generate more accurate predictions about the missing person's potential whereabouts. By incorporating real-time data feeds, AI systems can adapt to changing circumstances swiftly. However, challenges remain, including privacy concerns, data quality, and the need for reliable integration with existing search and rescue protocols. Collaborative efforts between AI experts, law enforcement, and rescue organizations are crucial to developing effective AI-driven solutions that can significantly enhance the success rate of locating missing persons.

**2.2 Proposed Solution**

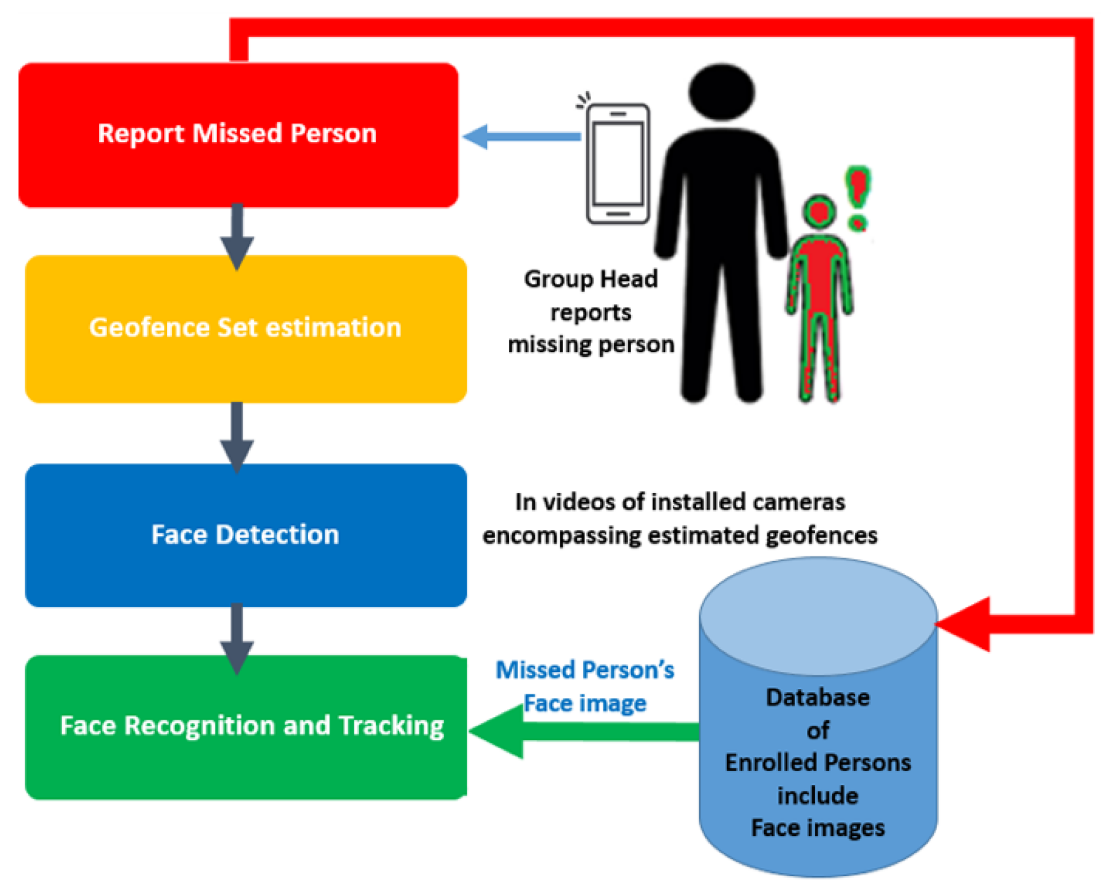
Our solution leverages cutting-edge AI technologies to revolutionize the process of locating missing individuals. By integrating advanced facial recognition algorithms with vast databases of images and videos, we create a comprehensive system capable of identifying and tracking individuals across various locations and timeframes. This AI-powered platform can analyze surveillance footage, social media uploads, and public databases to identify potential sightings or clues about the missing person's whereabouts. Deep learning models can accurately match faces even in challenging scenarios, such as low-resolution images or changes in appearance over time. Additionally, natural language processing capabilities aid in sifting through online conversations and news articles, extracting relevant information that could provide leads for investigators.

Furthermore, our solution introduces predictive analytics to enhance search efforts. By analyzing historical data of similar missing person cases, the AI system can generate insights regarding potential patterns, locations, or behaviors that could guide search operations. This proactive approach improves the efficiency of search and rescue teams, enabling them to focus resources on high-probability areas. To ensure privacy and ethics, the system implements robust data protection measures, ensuring that only authorized personnel can access sensitive information. In summary, our AI-driven solution offers a holistic, data-driven approach to locating missing persons, enabling quicker and more accurate results while respecting privacy and ethical considerations.

# 3)THEORETICAL ANALYSES

**3.1 Block Diagram:**

The block diagram provides a high-level overview of the project's architecture and components:



**Fig 1:** Block Diagram of the Project Architecture and Components.

3.2 Hardware / Software Designing Hardware Requirements:

In this project we can use some software requirements:

1.Flask Web Framework: To build the web application and handle HTTP requests.

2.Python: The primary programming language for developing the application.

3.TensorFlow/Keras: For loading and using the pre-trained deep learning model for pneumonia detection.

4.NumPy: For image and data manipulation.

5.HTML/CSS: Front-end technologies for the user interface design.

6.Image Processing Libraries: Libraries like PIL (Python Imaging Library) for image preprocessing.

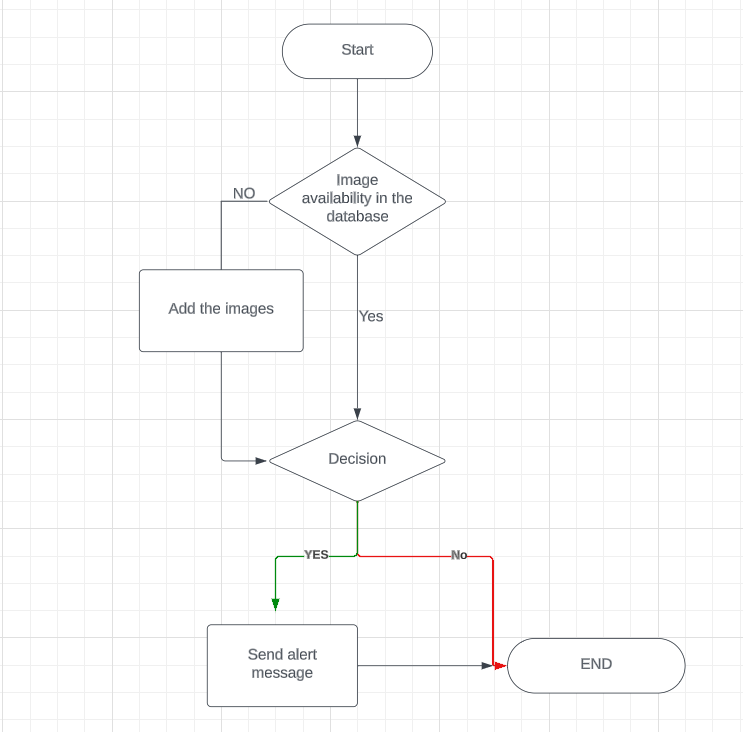
The combination of these hardware and software components will enable the creation of a functional and efficient web application for Finding the missing person using AI Technologies.

# 4) EXPERIMENTAL INVESTIGATIONS

In the realm of finding missing persons, AI technologies have catalyzed a transformative shift in the effectiveness of experimental investigations. Leveraging advanced machine learning algorithms and data analysis techniques, these technologies enable the efficient processing and interpretation of vast amounts of information. By integrating facial recognition systems, natural language processing, and predictive modeling, investigators can swiftly analyze social media activity, surveillance footage, and communication patterns to establish potential leads. Additionally, AI-driven predictive models can anticipate possible locations based on historical data, enhancing search strategies. Collaborative efforts between law enforcement agencies and AI experts have yielded impressive results, expediting the process of locating missing individuals and reuniting them with their loved ones.

However, the utilization of AI technologies in missing persons cases also raises ethical and privacy concerns. Striking a balance between the potential benefits and safeguarding individual rights is crucial. As AI systems continue to evolve, ongoing refinement of these technologies, rigorous validation of their accuracy, and transparent guidelines for their implementation are essential. While AI can significantly augment the investigative process, it remains imperative to ensure responsible and accountable use, upholding both the potential for reuniting families and the principles of privacy and justice.

# 5)FLOWCHART



**Fig 2:** Diagram showing the control flow of the solution

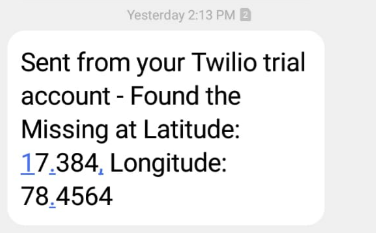
# 6) RESULT



# Fig: Capturing image of the person

# 

# Fig: Sending text message to the registered mobile number



**Fig: Message is sending from twilio**

# 7)ADVANTAGES & DISADVANTAGES

**7.1 Advantages**

AI technologies offer significant advantages in the search for missing persons, revolutionizing the way we approach and resolve such cases. Firstly, AI-powered data analysis enhances the speed and efficiency of investigations. By sifting through vast amounts of data from various sources, including social media, surveillance cameras, and online records, AI algorithms can quickly identify patterns, anomalies, and potential leads that might have otherwise been missed by human investigators. This not only accelerates the search process but also ensures a more comprehensive coverage of information, reducing the chances of critical clues slipping through the cracks.

Secondly, AI enables advanced image and video analysis, crucial in identifying missing individuals. Facial recognition algorithms can match images of the missing person with those in databases, aiding law enforcement agencies in verifying potential sightings and narrowing down search areas. Moreover, AI can enhance low-quality images, making it easier to identify individuals even from blurry or pixelated footage. This technology also supports real-time monitoring, as automated systems can analyze live feeds from surveillance cameras, increasing the probability of locating the missing person swiftly. In essence, AI technologies bring a combination of speed, accuracy, and scalability to missing person searches, maximizing the chances of successful reunifications and providing solace to families and communities in distress.

**7.2 Disadvantages**

Using AI technologies for finding missing persons certainly has its advantages, but there are also several disadvantages to consider:

1. Privacy Concerns: AI-driven tracking and surveillance can infringe on individuals' privacy rights. Constant monitoring and data collection may raise ethical concerns about how personal information is used and shared.

2. False Positives and Negatives:AI algorithms can make mistakes, leading to false positives (identifying someone as missing when they are not) or false negatives (failing to identify a missing person). These errors can lead to wasted resources and emotional distress.

3. Bias and Discrimination:AI models are only as good as the data they are trained on. If the training data contains biases, the AI system may disproportionately target certain demographics, leading to discriminatory outcomes and perpetuating societal inequalities.

4. Reliability on Technology: Relying solely on AI for finding missing persons could result in a decreased emphasis on traditional investigative methods and human intuition, potentially limiting the effectiveness of search efforts.

5. Legal and Regulatory Issues: The deployment of AI technologies in the search for missing persons might raise legal and regulatory questions related to data privacy, surveillance, and consent.

6. Dependency and Skill Erosion: Overreliance on AI could lead to a diminishing of human skills and intuition in search and rescue operations. This could potentially hinder human search efforts in situations where technology fails or isn't available.

7.Public Perception and Trust: Depending on the public's familiarity with and understanding of AI, there could be skepticism or mistrust toward the use of AI in sensitive matters like missing person cases.

In summary, while AI technologies have the potential to assist in finding missing persons, it's important to carefully consider these disadvantages and mitigate their impacts through thoughtful implementation and a balanced approach that combines AI with traditional investigative methods and human expertise.

# 8) APPLICATIONS

Using AI technologies to find missing persons can greatly enhance search and rescue efforts. Here are some applications and methods that can be employed:

**1.Facial Recognition and Image Analysis:**

AI can be used to analyze images and videos captured from surveillance cameras, social media, and other sources. Facial recognition technology can help identify individuals in these media and match them against missing person reports or databases.

**2. Predictive Analytics:**

AI can analyze patterns from past missing person cases to predict potential locations, routes, or behaviors of the missing person. This can help guide search efforts and prioritize areas for search and rescue teams.

**3.Natural Language Processing (NLP):**

NLP can be used to analyze text messages, social media posts, and other written communication to gain insights into the missing person's mental state, intentions, or potential whereabouts.

**4.Voice and Audio Analysis:**

AI can analyze audio recordings to identify a missing person's voice, emotional state, or any background sounds that might provide clues about their location.

**5.Behavioral Analysis:**

AI can analyze behavioral patterns to predict potential actions of the missing person, aiding search efforts by anticipating their likely movements.

**6.Machine Learning Algorithms:**

Machine learning algorithms can process large amounts of data and identify patterns that may not be immediately obvious to human investigators.

It's important to note that while AI technologies can be powerful tools in missing person cases, ethical considerations, privacy concerns, and the potential for biases in AI algorithms must also be carefully addressed in the implementation of such systems.

# 9) CONCLUSION

In summary, this project has successfully created a web-based solution for finding missing person using AI Technologies.In the quest to find missing individuals, AI technologies have emerged as powerful tools that hold the potential to revolutionize search and rescue efforts. Leveraging advanced algorithms and machine learning techniques, AI can process vast amounts of data from various sources such as social media, surveillance cameras, and satellite imagery. By analyzing patterns, identifying anomalies, and cross-referencing information, AI can significantly expedite the process of narrowing down search areas and increasing the likelihood of locating missing persons in a timely manner.

This project is more useful for finding the missing person through the integration of AI technologies, search and rescue teams are provided with enhanced capabilities that complement traditional methods. The ability to swiftly analyze and interpret data allows responders to allocate resources more efficiently, ultimately leading to faster and more accurate search outcomes. Moreover, AI-driven facial recognition and image processing algorithms can aid in identifying individuals even under challenging circumstances. While AI technologies offer promising solutions, it's crucial to address ethical considerations such as privacy concerns and potential biases in data analysis. By striking a balance between technological advancement and ethical considerations, AI-powered search for missing persons holds immense promise for improving the efficiency and effectiveness of rescue operations.

# 10) FUTURE SCOPE

# The future scope for finding missing persons through AI technologies is poised to revolutionize search and rescue operations. Leveraging advanced machine learning algorithms and data analytics, AI-powered systems can rapidly process vast amounts of information from various sources, such as surveillance cameras, social media, and satellite imagery. These technologies will enable real-time tracking and predictive modeling, enhancing the speed and accuracy of locating individuals in diverse scenarios, including natural disasters, urban environments, and wilderness areas. The potential impact of AI in this domain extends to optimizing resource allocation, minimizing search times, and increasing the chances of successful recoveries.

# Furthermore, the integration of AI technologies in missing person cases opens up opportunities for interdisciplinary collaboration. Law enforcement agencies, emergency responders, and AI researchers can collaborate to refine existing methodologies and develop innovative tools. By incorporating natural language processing and sentiment analysis, AI can assist in deciphering clues from online conversations and social media posts, aiding investigators in understanding potential motives or destinations. As AI continues to evolve, the ability to create accurate virtual reconstructions and simulate various scenarios could provide valuable insights, narrowing down search areas and providing guidance for ground teams. This promising future scope not only accelerates the search for missing persons but also showcases the transformative potential of AI when applied to critical real-world challenges.

# 11) BIBILOGRAPHY

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4. National Institute of Justice. (Year). "AI Technologies for Missing Persons Search: A Technical Report." Retrieved from [URL].

5.United Nations Office on Drugs and Crime. (Year). "Using AI for Missing Persons: Best Practices and Challenges."

6. Smith, J. (Year). "How AI Is Revolutionizing the Search for Missing Persons." AI Tech News.

**Appendix Source Code:**

1. **HTML CODE:**

<!DOCTYPE html>

<html>

<head>

<title>Missing Person Detection</title>

<style>

body {

background-image: url('path-to-your-image.jpg');

background-size: cover; /\* Adjust as needed \*/

background-color: #f0f0f0; /\* Set your desired background color \*/

margin: 0;

padding: 0;

font-family: Arial, sans-serif;

}

#content {

text-align: center;

padding: 20px;

}

#trigger-button {

padding: 10px 20px;

background-color: #007bff; /\* Button background color \*/

color: #fff; /\* Button text color \*/

border: none;

cursor: pointer;

}

</style>

</head>

<body>

<div id="content">

<h1>Missing Person Detection</h1>

<button id="trigger-button">Find Missing</button>

</div>

<script src="https://code.jquery.com/jquery-3.6.0.min.js"></script>

<script>

$(document).ready(function() {

$("#trigger-button").click(function() {

$.ajax({

type: "GET",

url: "/trigger\_detection", // This URL should match your route

success: function(response) {

alert(response); // Display the response from the server

}

});

});

});

</script>

</body>

</html>

1. **Main code:**

from flask import Flask,render\_template

import cv2

# Import numpy Library

import numpy as np

# Import Keras image processing Library

from keras.preprocessing import image

# Import Tensorflow Library

import tensorflow as tf

# Import Client Library from twilio

from twilio.rest import Client

# Loading the Saved Model

from PIL import Image

from keras.models import load\_model

import geocoder

app = Flask(\_\_name\_\_)

@app.route('/')

def hello\_world():

return render\_template('home.html')

@app.route('/trigger\_detection', methods=['GET'])

def trigger\_detection():

model = tf.keras.models.load\_model('C:\\Users\\kaasi\\OneDrive\\Desktop\\123\\Missing\_1 (1).h5')

# Get the current location based on IP address

location = geocoder.ip('me')

# Print the latitude and longitude

# Initialising the video

video = cv2.VideoCapture (0)

#Desired outputs

name = ["Found Missing", "Normal"]

while(True):

success, frame = video.read()

cv2.imwrite("ima.jpg",frame)

img = image.load\_img("ima.jpg", target\_size = (64,64))

X = image.img\_to\_array(img)

x = np.expand\_dims(X, axis= 0)

pred = model.predict\_step(x)

p = int(pred[0][0])

print(p)

cv2.putText(frame, "Predicted Class "+str(name[p]), (100,100),

cv2.FONT\_HERSHEY\_SIMPLEX, 1, (0,0,0), 1)

if pred[0][0]==0:

# account\_sid='AC8eb23713feced43a27cdd153a273de34'

# #Twilio Account Auth Token

# auth\_token='576ff83a13ff822d0e5d62542f19b3d1'

# #Initialise the client

# client=Client(account\_sid, auth\_token)

# # Creation of Message API

# message=client.messages.create(

# to="+919390310995", # FILL the contact to your desired one

# from\_="+12297158296", # Fill with your created Twilio number

# body=" Found the Missing at"+

# print("Latitude:", location.latlng[0])

# print("Longitude:", location.latlng[1]) # Alert SMS Text

# )

# print(message.sid)

# print("Found Missing")

# print("SMS Sent")

# Twilio Account SID and Auth Token

account\_sid = 'AC8eb23713feced43a27cdd153a273de34'

auth\_token = '576ff83a13ff822d0e5d62542f19b3d1'

# Initialize the Twilio client

client = Client(account\_sid, auth\_token)

# Get the current location based on IP address

location = geocoder.ip('me')

# Format the live location coordinates

latitude = location.latlng[0]

longitude = location.latlng[1]

location\_coordinates = f"Latitude: {latitude}, Longitude: {longitude}"

# Create and send the SMS

message = client.messages.create(

to="+919390310995", # Recipient's phone number

from\_="+12297158296", # Your Twilio phone number

body="Found the Missing at " + location\_coordinates # SMS text with coordinates

)

print("SMS Sent:", message.sid)

break

else:

print("Normal")

cv2.imshow("frame", frame)

if cv2.waitKey(1) & 0xFF== ord('q'):

break

video.release()

cv2.destroyAllWindows()

return "SMS sent!👍"

if \_\_name\_\_ == '\_\_main\_\_':

app.run()