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DEPARTMENT OF CSE

MISSING PERSON USING HAARCASCADES

PROJECT GUIDE:

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MISSING PERSON USING HAARCASCADES

DOMAIN DESCRIPTION

This project falls under the domain of computer vision and machine learning. The goal of this project is to develop an algorithm that can detect missing persons from input images using Haar cascades, a popular object detection technique in computer vision. The algorithm processes the input image and looks for the presence of faces or full bodies in the image. If a face or full body is detected, the algorithm assumes it is the missing person and sends an alert email to the user. This project aims to assist in the search for missing persons and reduce the time it takes to locate them by automating the process of detection using computer vision techniques. The project could potentially be used by law enforcement agencies, non-governmental organizations, or the public to aid in the search for missing persons.

INTRODUCTION

- The missing person detection project using Haar cascades is a computer vision and machine learning project that aims to assist in the search for missing persons.
- The project uses Haar cascades, a popular object detection technique in computer vision, to detect missing persons from input images.
- The algorithm processes the input image and looks for the presence of faces or full bodies in the image. If a face or full body is detected, the algorithm assumes it is the missing person and sends an alert email to the user.
- The project aims to reduce the time it takes to locate missing persons by automating the process of detection using computer vision techniques.
- The algorithm could potentially be used by law enforcement agencies, non-governmental organizations, or the public to aid in the search for missing persons.

INTRODUCTION

- In today's world, finding missing persons has become a crucial task for law enforcement agencies and the public. It is a daunting challenge to locate missing persons, particularly when they go unfound for extended periods. Face matching algorithms have recently emerged as a promising technology that can aid in the search for missing individuals.
- The proposed system aims to automate the process of finding missing persons by using face matching algorithms to recognize and match images. The system will be accessed through a volunteer-based application called the Missing Person Identification and Location System (MPILS). The application will allow volunteers to take a picture of a missing person and compare it to a database of images to determine if there is a match. If a match is not found, the volunteer can upload the information to the database, along with their current location, and notify higher authorities of the situation.

AIM AND OBJECTIVE

Aims:

- To develop an algorithm using Haar cascades that can detect missing persons from input images in an automated manner.
- To assist in the search for missing persons and reduce the time it takes to locate them by automating the process of detection using computer vision techniques.

Objectives:

- To identify the Haar cascades classifiers required for detecting faces and full bodies in input images.
- To develop a program that can receive an image of a missing person as input.
- To convert the input image to grayscale for processing by the Haar cascades classifiers.
- To use the face detector Haar cascades classifier to detect any faces in the grayscale image.
- To use the full body detector Haar cascades classifier to detect any full bodies in the grayscale image if no faces are detected.

EXISTING SYSTEM

- Currently, there is no widely used automated system for detecting missing persons using Haar cascades or other computer vision techniques.
- The search for missing persons is often conducted manually by law enforcement agencies, non-governmental organizations, and the public using a range of methods, including flyers, social media, and physical searches.
- Facial recognition systems and other biometric technologies have been used to identify missing persons in some cases, but these systems have limitations and have been subject to controversy due to privacy concerns and potential bias.

EXISTING SYSTEM

- The existing system for finding missing persons using face matching algorithm with user and admin dashboard is a technological solution that helps in locating missing individuals using facial recognition. This system comprises several components that work together to facilitate the process of locating missing persons. At the core of this system is the face recognition software. This software is designed to analyze images and identify individuals based on their facial features. The software uses machine learning algorithms that are trained on large datasets of facial images to detect key facial landmarks and match them against images of missing persons.

- The user dashboard is another key component of the system. The dashboard allows individuals to submit information about missing persons to a centralized database. This information includes photographs, descriptions, and any other relevant details that could help in locating the missing individual. The user dashboard also allows users to track the progress of their submissions and receive updates on any developments.

LIMITATIONS

- Manual search methods can be time-consuming and resource-intensive, requiring large numbers of people and extensive search areas to be covered.
- Facial recognition systems and other biometric technologies may not always be effective in identifying missing persons, particularly if there are limited images or data available for comparison.
- These systems can also be subject to biases and inaccuracies, particularly if they rely on datasets that are not diverse or representative of the population as a whole.
- Image recognition software that matches images of unidentified persons with missing persons databases may not always be accurate, particularly if the image quality is poor or there are other factors that make matching difficult.

LIMITATIONS

- Accuracy: The accuracy of AI algorithms for face recognition can vary and may not always be 100% accurate. This can lead to false positives or false negatives, which can result in incorrect identifications.
- Data quality: The quality of the data used to train the AI algorithm can significantly affect the accuracy of the results. Poor-quality images or videos can result in inaccurate matching or identification.
- Privacy concerns: The use of AI for missing person identification raises concerns about privacy and data protection. This includes concerns about how the data is collected, stored, and shared, and the potential misuse of the data.
- Bias: AI algorithms can be biased if they are trained on a limited dataset or if the data is not representative of the diverse population. This can lead to inaccurate identifications or discrimination against certain groups of people.
- Technical limitations: The effectiveness of AI in missing person identification is limited by the availability of data and hardware resources. Additionally, the accuracy of AI algorithms can be affected by factors such as lighting, angle, and facial expressions.

PROBLEM STATEMENT

The problem is the time-consuming and inefficient process of locating missing persons using existing methods. The proposed solution is an automated missing person detection system using Haar cascades, which aims to improve efficiency and effectiveness. However, the system may face accuracy and reliability limitations. The goal is to develop a more effective and reliable missing person detection system using computer vision techniques.

PROPOSED SYSTEM

The proposed system is an automated missing person detection system using Haarcascades, which aims to improve the efficiency and effectiveness of locating missing persons. The system is accessible, relatively low cost, and easy to use, but may have limitations in terms of accuracy and reliability. The goal is to develop a more effective and reliable system using computer vision techniques.

- Image Similarity gives us a result that indicates how visually similar the two images are. With a score of '0' meaning that the two photos are identical, the lower the value, the more contextually similar the two images are. Letting machine vision do it for you using this API will save you from having to sift through datasets looking for duplicates or identifying a visually comparable set of images. The image similarity API analyses two photos and produces a distance between the two images. The distance value tells us how visually similar the two photographs are, with a distance value of 0 representing an exact match. With the help of the distance value, we can determine how two photographs evolve over time or find duplicates in your user data. An indicator of how visually similar two photographs are is returned by the API. With this, you can group similar images together, search for duplicates in a collection, or incorporate image similarity into your apps.

PROPOSED SYSTEM

- We can use the sentence similarity API to lookup using an image In this scenario, the user is prompted to provide a picture of the missing person so that the database can be searched. This has two applications. The user will first see information on the missing individual, such as name, age, contact information, and location, if the record in the database matches. Search by filter: Users can quickly search for records by using the following filters in addition to the two options listed above. Filter by name: When a user enters a name, the appropriate information is taken from the database. Filter by age: If the stranger uploading the case does not know the exact age, a slider is provided to select a range of ages. The details of those belonging to the chosen age group will be shown. Filter by location: User will be prompted to enter the state to receive the relevant information when using the location filter.

HARDWARE AND SOFTWARE REQUIREMENTS

Hardware Requirements:

- A computer or mobile device capable of running the required software
- A camera or other input device for capturing images

Software Requirements:

- An operating system that supports the required software
- OpenCV library, a popular computer vision library for object detection
- Python programming language, used to develop the missing person detection algorithm
- Haar cascades classifiers for detecting faces and full bodies

REQUIREMENT SPECIFICATIONS

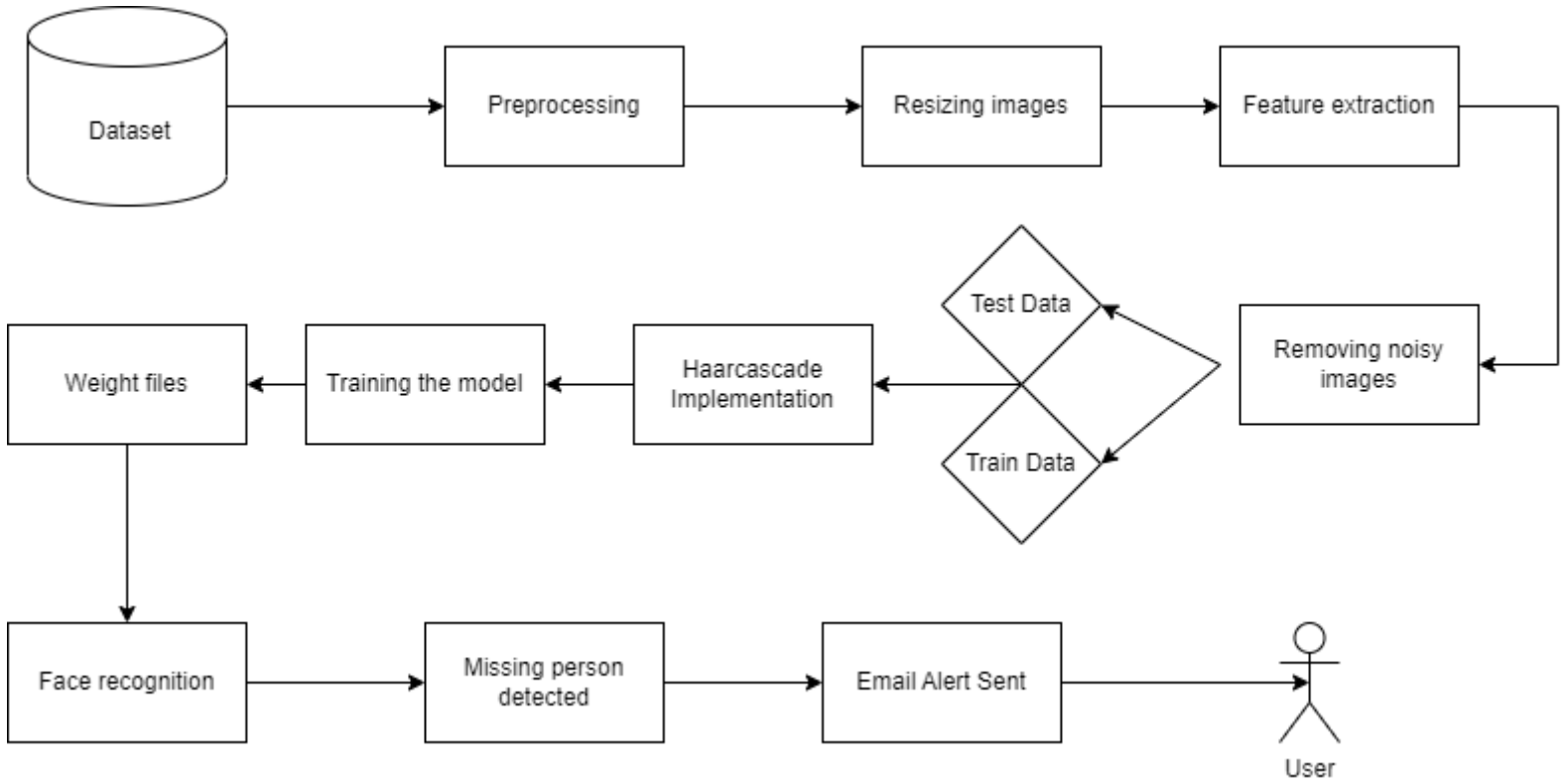
- **1 HARDWARE REQUIREMENTS**

- Processor : Pentium Dual Core 2.00GHZ
- Hard disk : 120 GB
- RAM : 2GB (minimum)
- Keyboard : 110 keys enhanced

- **3.4.2 SOFTWARE REQUIREMENTS**

- Operating system : Windows7 (with service pack 1), 8, 8.1 and 10
- Language : Python

ARCHITECTURE DIAGRAM



DATA FLOW DIAGRAM

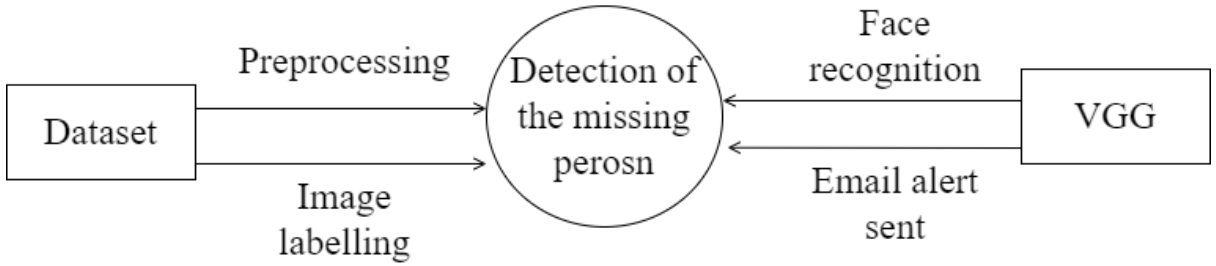


Fig No.1.1 – Data Flow Diagram Level 0

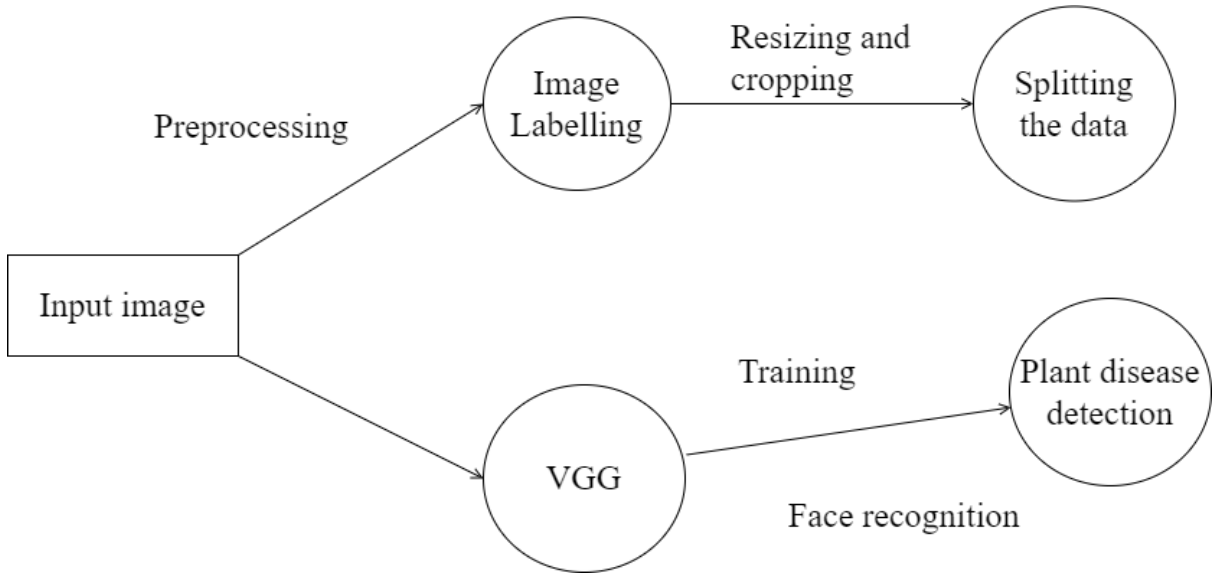
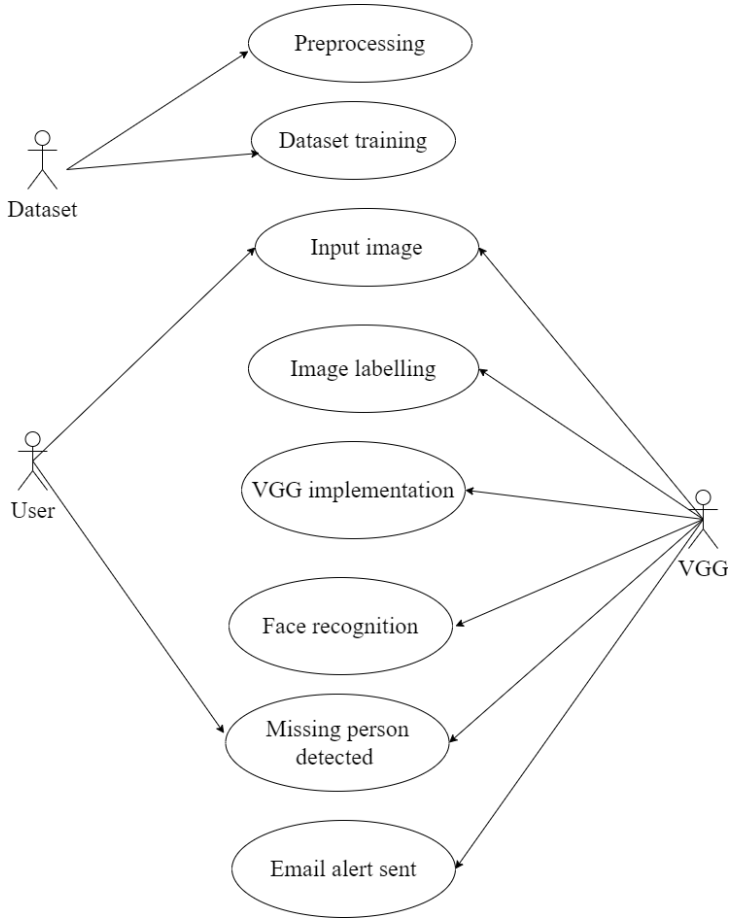
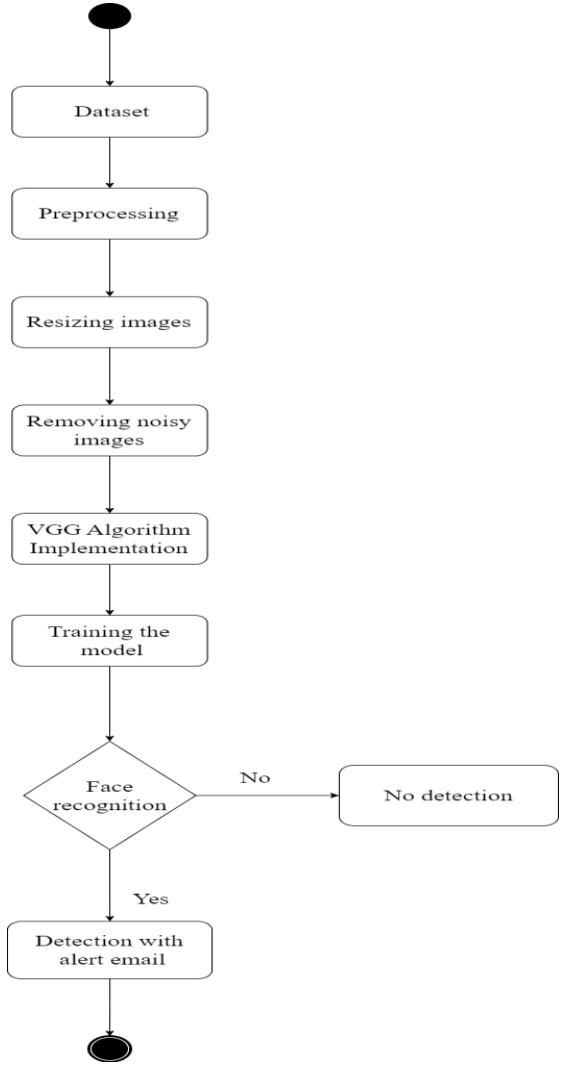


Fig 1.2 – Data Flow Diagram Level 1

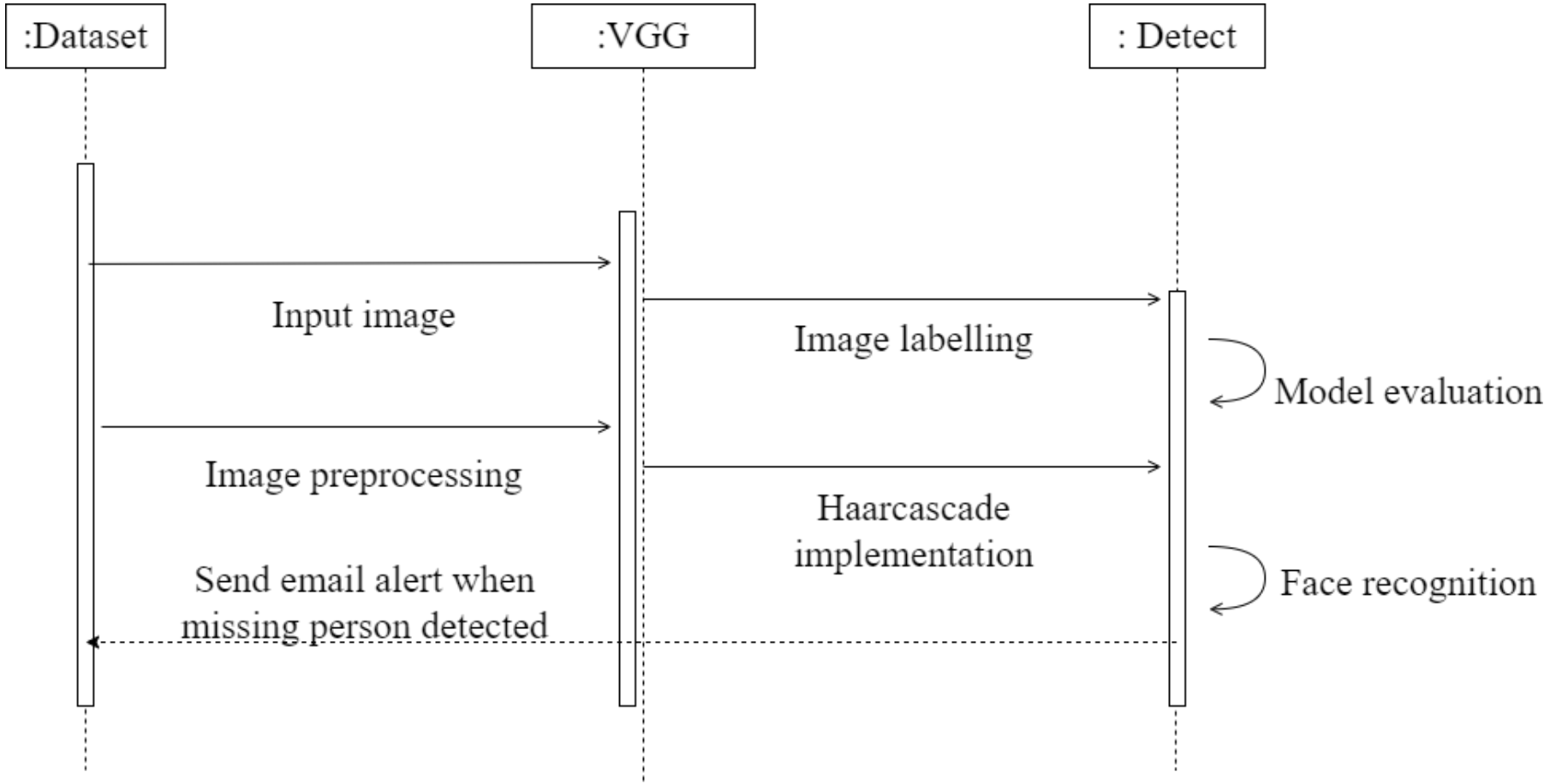
USE CASE DIAGRAM



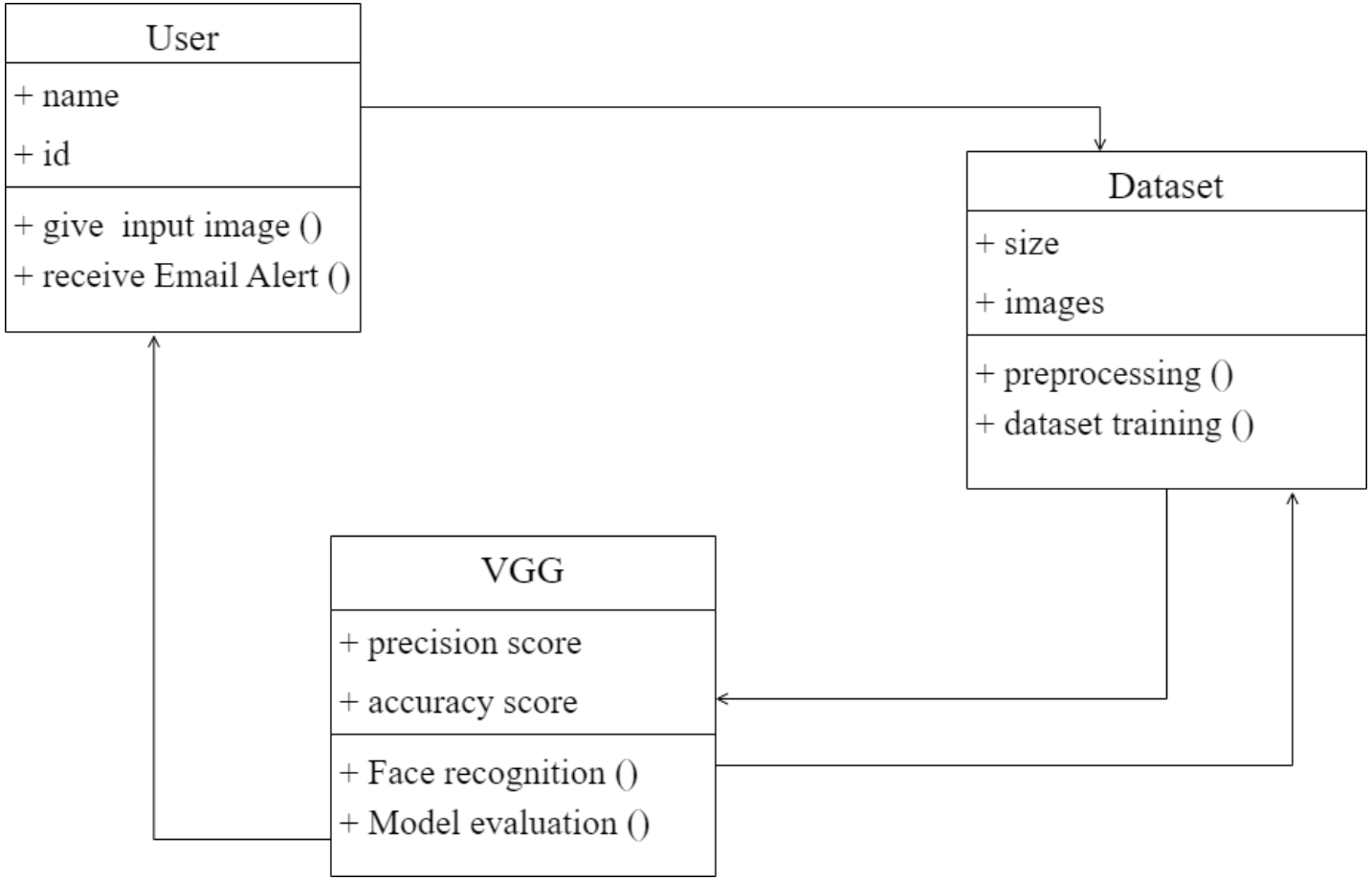
ACTIVITY DIAGRAM



SEQUENCE DIAGRAM



CLASS DIAGRAM



MODULES

- **Image Processing Module:** This module is responsible for receiving the input image and processing it for detection by the Haar cascades classifiers. The module converts the input image to grayscale, normalizes the pixel intensities, and resizes the image to a suitable resolution. The module then passes the processed image to the Haar cascades classifiers for detection.
- **Detection Module:** This module is responsible for detecting the missing person from the processed image using the Haar cascades classifiers. The module first uses the face detector Haar cascades classifier to detect any faces in the image. If no faces are detected, the module uses the full body detector Haar cascades classifier to detect any full bodies in the image. If a face or full body is detected, the module assumes it is the missing person and sends an alert email to the user with the details of the detection.
- **Email Alert Module:** This module is responsible for sending an alert email to the user when the missing person is detected. The module formats the email with the relevant details of the detection, including the location, date, and time of the detection, and sends it to the user's email address. The module also allows the user to configure the email alert settings, such as the frequency of alerts and the email address to receive the alerts.

MODULES

- **DATA ACQUISITION AND DATA PREPROCESSING**
- **Data Acquisition**
- We will take deep ai dataset with similar images set to train our algorithm. The dataset contains many images that may or may or not be similar. We will use it to check for image similarity by developing an image similarity API in this project.
- **Data Cleaning - Preprocessing of images**
- After gathering the photos, we pre-processed the dataset of photographs that we had gathered. The photos in the dataset underwent the following varied processes during pre-processing.

MODULES

- **MODEL IMPROVISATION**
- Deep ai's image similarity model will be applied. When two photographs are compared, Image Similarity gives us a result that indicates how visually similar the two images are.
- With a score of '0' meaning that the two photos are identical, the lower the value, the more contextually similar the two images are. Letting machine vision do it for you using this API will save you from having to sift through datasets looking for duplicates or identifying a visually comparable set of images.
- The image similarity API analyses two photos and produces a distance between the two images. The distance value tells us how visually similar the two photographs are, with a distance value of 0 representing an exact match. With the help of the distance value, we can determine how two photographs evolve over time or find duplicates in your user data.

SCOPE OF PROPOSED SYSTEM

- The proposed system aims to significantly improve the search for missing persons by automating the detection process using computer vision techniques. It has potential for wide accessibility and can process large numbers of input images quickly. However, limitations related to input image quality, classifier accuracy, and legal/ethical considerations may exist. Further research and development are needed to improve the system's effectiveness and reliability.

FUTURE ENHANCEMENT

1. Use of additional classifiers: In addition to the face and full body classifiers, additional classifiers could be added to the system to improve its accuracy and reliability. For example, classifiers for specific clothing or accessories could be used to help identify missing persons more accurately.
2. Integration with other technologies: The system could be integrated with other technologies, such as drones or satellite imaging, to improve the efficiency and effectiveness of the search for missing persons. For example, the system could use drone footage to identify potential locations for missing persons and then process the footage using Haar cascades to detect any faces or full bodies.

THANK YOU