

Missing Child Identification System using Deep Learning and Multiclass SVM

Dongari SaiPreetham(17311A1282)

Medagani Srichand(17311A1287)

Sanket Gemawat(17311A1283)

Under the Guidance of :

Dr.N.Divya

Assistant Professor

SNIST

Content

- Abstract
- Introduction
- Related Work
- System Architecture
- Existing System
- Proposed System
- Modules
- System Configuration

Abstract

Abstract

Introduction

Related work

Proposed System

Algorithm

References

- In India a countless number of children are reported missing every year. Among the missing child cases a large percentage of children remain untraced. This paper presents a novel use of deep learning methodology for identifying the reported missing child from the photos of multitude of children available, with the help of face recognition.
- The public can upload photographs of suspicious child into a common portal with landmarks and remarks. The photo will be automatically compared with the registered photos of the missing child from the repository. Classification of the input child image is performed and photo with best match will be selected from the database of missing children.

Abstract

Abstract

Introduction

Related work

Proposed System

Algorithm

References

- For this, a deep learning model is trained to correctly identify the missing child from the missing child image database provided, using the facial image uploaded by the public. The Convolutional Neural Network (CNN), a highly effective deep learning technique for image based applications is adopted here for face recognition. Face descriptors are extracted from the images using a pre-trained CNN model VGG-Face deep architecture.

Abstract

Abstract

Introduction

Related work

Proposed System

Algorithm

References

- Compared with normal deep learning applications, our algorithm uses convolution network only as a high level feature extractor and the child recognition is done by the trained KNN classifier. Choosing the best performing CNN model for face recognition, VGG-Face and proper training of it results in a deep learning model invariant to noise, illumination, contrast, occlusion, image pose and age of the child and it outperforms earlier methods in face recognition based missing child identification

Introduction

Abstract

Introduction

Related work

Proposed System

Algorithm

References

- Children are the greatest asset of each nation. The future of any country depends upon the right upbringing of its children. India is the second populous country in the world and children represent a significant percentage of total population.
- But unfortunately a large number of children go missing every year in India due to various reasons including abduction or kidnapping, run-away children, trafficked children and lost children

Introduction

Abstract

Introduction

Related work

Proposed System

Algorithm

References

- 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 untraced. Children who go missing may be exploited and abused for various purposes
- As per the National Crime Records Bureau (NCRB) report which was cited by the Ministry of Home Affairs (MHA) in the Parliament (LS Q no. 3928, 20-032018), 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 untraced till the end of the year.

Introduction

Abstract

Introduction

Related work

Proposed System

Algorithm

References

- Many NGOs claim that estimates of missing children are much higher than reported. The missing from one region may be found in another region or another state, for various reasons. So even if a child is found, it is difficult to identify him/her from the reported missing cases.
- A framework and methodology for developing an assistive tool for tracing missing child is described in this paper. An idea for maintaining a virtual space is proposed, such that the recent photographs of children given by parents at the time of reporting missing cases is saved in a repository

Introduction

Abstract

Introduction

Related work

Proposed System

Algorithm

References

- The public is given provision to voluntarily take photographs of children in suspected situations and uploaded in that portal. Automatic searching of this photo among the missing child case images will be provided in the application. This supports the police officials to locate the child anywhere in India.

Related Work

- Abstract
- Introduction
- Related Work**
- Proposed System
- Algorithm
- References

- Zhongfei Zhang;Srihari, R.K.; Rao,A.
- This paper presents a face detection technique and its applications in image retrieval. Even though this face detection method has relatively high false positives and low detection rate (as compared with the dedicated face detection systems in the literature of image understanding),
- due to its simple and fast nature, it has been shown that this system may be well applied in image retrieval in certain focused application domains.

Related Work

Abstract

Introduction

Related Work

Proposed System

Algorithm

References

- Two application examples are given: one combining face detection with indexed collateral text for image retrieval regarding human beings, and the other combining face detection with conventional similarity matching techniques for image retrieval with similar background.

Related Work

Abstract

Introduction

Related Work

Proposed System

Algorithm

References

- Ji Tao and Yap-Peng Tan
- In this paper, we propose a novel approach to automatic detection and clustering of human faces presented in videos. In each video shot, continuously appearing human faces are firstly associated to form face sequences. Instead of matching the face sequences directly, we partition them into subsequences consisting of similar poses for the ease of comparison.

Related Work

Abstract

Introduction

Related Work

Proposed System

Algorithm

References

- . Face subsequences can then be clustered by graph partitioning with the computed affinity matrix. Prior to that, however, a set of constraints need to be formulated so as to incorporate domain knowledge into the graph. Moreover, we propose a constraint propagation algorithm to fully exploit the space-level implications of these constraints

Related Work

Abstract

Introduction

Related Work

Proposed System

Algorithm

References

- **"Missing child identification using face recognition system"**
- The human face plays an important role in our social interaction, conveying people's identity. Face recognition is a task that humans perform routinely and effortlessly in their daily lives.
- Face recognition, as one of the primary biometric technologies, became more and more important owing to rapid advances in technologies such as digital cameras, the Internet and mobile devices, and increased demands on security.

Related Work

Abstract

Introduction

Related Work

Proposed System

Algorithm

References

- A facial recognition system is a computer application capable of identifying or verifying a person from a digital image or a video frame from a video source.
- Face Recognition System is a computer based digital technology and is an active area of research.
- This paper addresses the building of face recognition system by using Principal Component Analysis (PCA) method. The PCA has been extensively employed for face recognition algorithms.

Related Work

Abstract

Introduction

Related Work

Proposed System

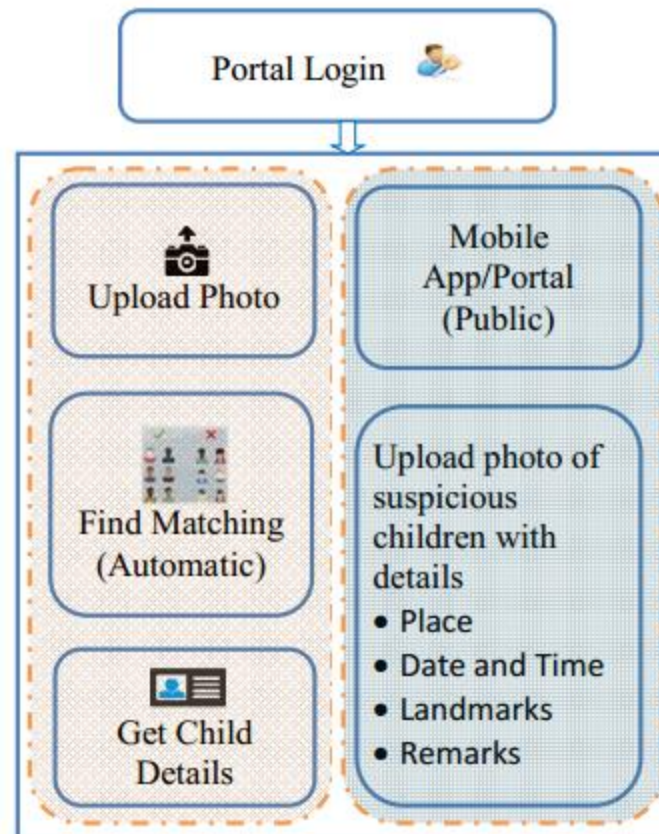
Algorithm

References

- It not only reduces the dimensionality of the image, but also retains some of the variations in the image data.
- The system functions by projecting face image onto a feature space that spans the significant variations among known face images.
- The significant features are known as “Eigen faces”, because they are the eigenvectors (Principal Component) of the set of faces they do not necessarily correspond to the features such as eyes, ears, and noses.

System Architecture

Abstract
Introduction
Related work
Proposed System
Algorithm
References



Existing System

Abstract

Introduction

Related work

Proposed System

Algorithm

References

- Mostly missing child cases are reported to the police.
- The child missing from one region may be found in another region or another state, for various reasons.
- So even if a child is found, it is difficult to identify him/her from the reported missing cases.
- A framework and methodology for developing an assistive tool for tracing missing child is described in this paper.
- An idea for maintaining a virtual space is proposed, such that the recent photographs of children given by parents at the time of reporting missing cases is saved in a repository.
- The public is given provision to voluntarily take photographs of children in suspected situations and uploaded in that portal. Automatic searching of this photo among the missing child case images will be provided in the application. This supports the police officials to locate the child anywhere in India.

Proposed System

- Abstract
- Introduction
- Related work
- Proposed System**
- Algorithm
- References

- Here we propose a methodology for missing child identification which combines facial feature extraction based on deep learning and matching based on KNN.
- The proposed system utilizes face recognition for missing child identification. This is to help authorities and parents in missing child investigation.

Modules

Abstract
Introduction
Related work
Proposed System
Algorithm
References

- **Preprocessing:**
- Preprocessing input raw image in the context of face recognition involves acquiring the face region and standardizing images in a format compatible with the CNN architecture employed. Each CNN has a different input size requirement. The photographs of missing child acquired by a digital camera or mobile phone are taken and categorized into separate cases for creating the database of face recognition system. The face region in each image is identified and cropped for getting the input face images.

Modules

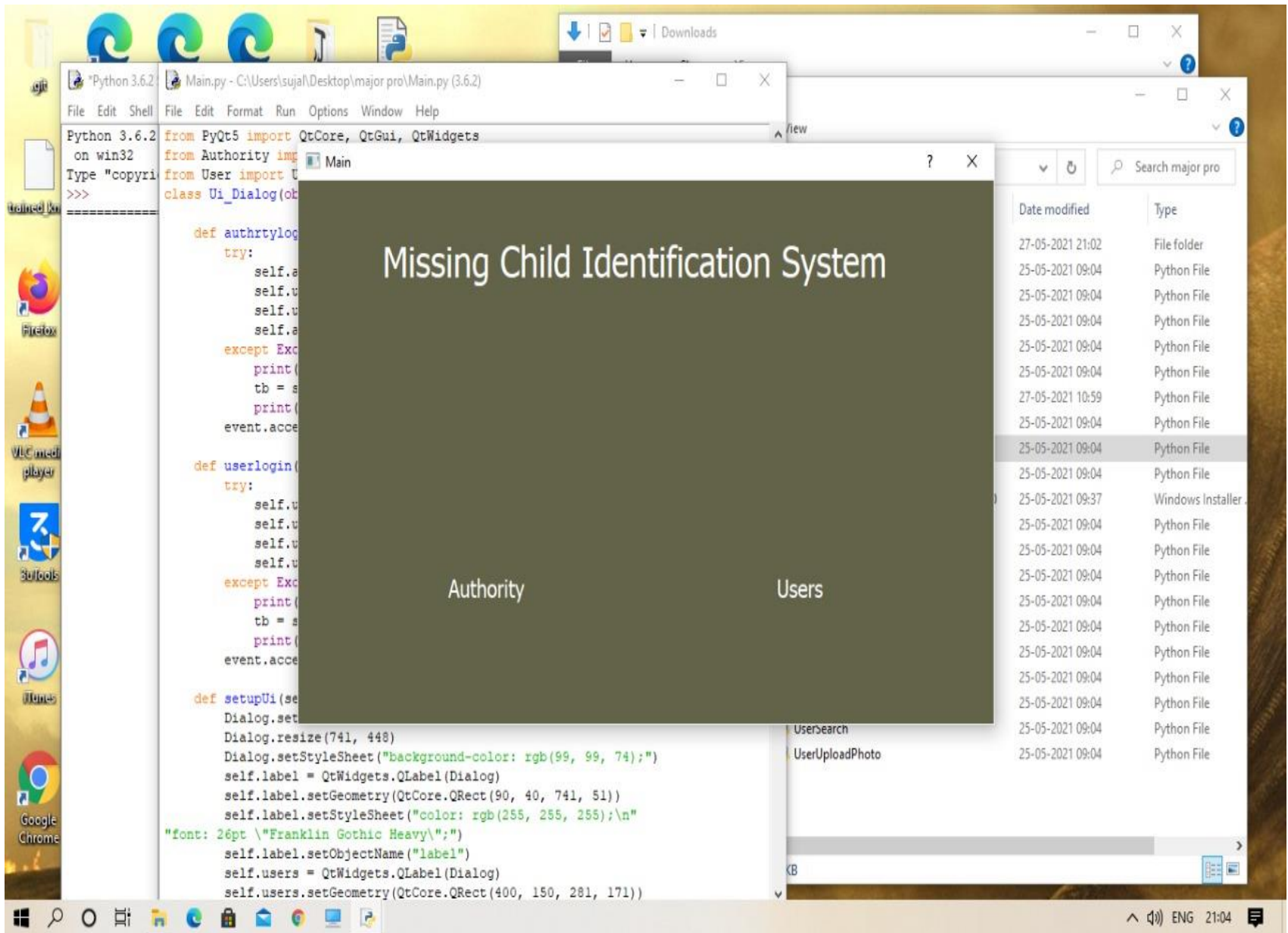
Abstract
Introduction
Related work
Proposed System
Algorithm
References

- **Upload Photo:**
- It consists of a national portal for storing details of missing child along with the photo. Whenever a child missing is reported, along with the FIR, the concerned officer uploads the photo of the missing child into the portal. The public can upload photo of any suspicious child at any time into the portal with details like place, time, landmarks and remarks. The photo uploaded by the users will be automatically compared with photos of the registered missing children and if a matching photo with sufficient score is found, then an alert email will be sent to the concerned officer. The message will also be visible in the message box of the concerned officer login screen.

Modules

Abstract
Introduction
Related work
Proposed System
Algorithm
References

- **Search:**
- Whenever users uploads photo of a suspected child, the system generates template vector of the facial features from the uploaded photo. If a matching is found in the repository, the system displays the most matched photo and pushes a message to the concerned Officer portal or Email the alert message of matching child. Similarly the Officer can check for any matching with the database at any time using the proposed system.



Python 3.6.2 Main.py - C:\Users\sujal\Desktop\major pro\Main.py (3.6.2)

File Edit Shell File Edit Format Run Options Window Help

```
Python 3.6.2
on win32
Type "copyri
>>>

from PyQt5 import QtCo
from Authority imp
from User import U
class Ui_Dialog(ob

def authrtylog
try:
    self.a
    self.u
    self.u
    self.a
except Exc
print(
tb = s
print(
event.acce

def userlogin(
try:
    self.u
    self.u
    self.u
    self.u
except Exc
print(
tb = s
print(
event.acce

def setupUi(se
Dialog.set
Dialog.set
Dialog.resize(
Dialog.setStyleSheet("background-color: rgb(99, 99, 74);")
self.label = QtWidgets.QLabel(Dialog)
self.label.setGeometry(QtCore.QRect(90, 40, 741, 51))
self.label.setStyleSheet("color: rgb(255, 255, 255);\n"
"font: 26pt 'Franklin Gothic Heavy';")
self.label.setObjectName("label")
self.users = QtWidgets.QLabel(Dialog)
self.users.setGeometry(QtCore.QRect(400, 150, 281, 171))
```

Authority

Authority Login

User ID

Password

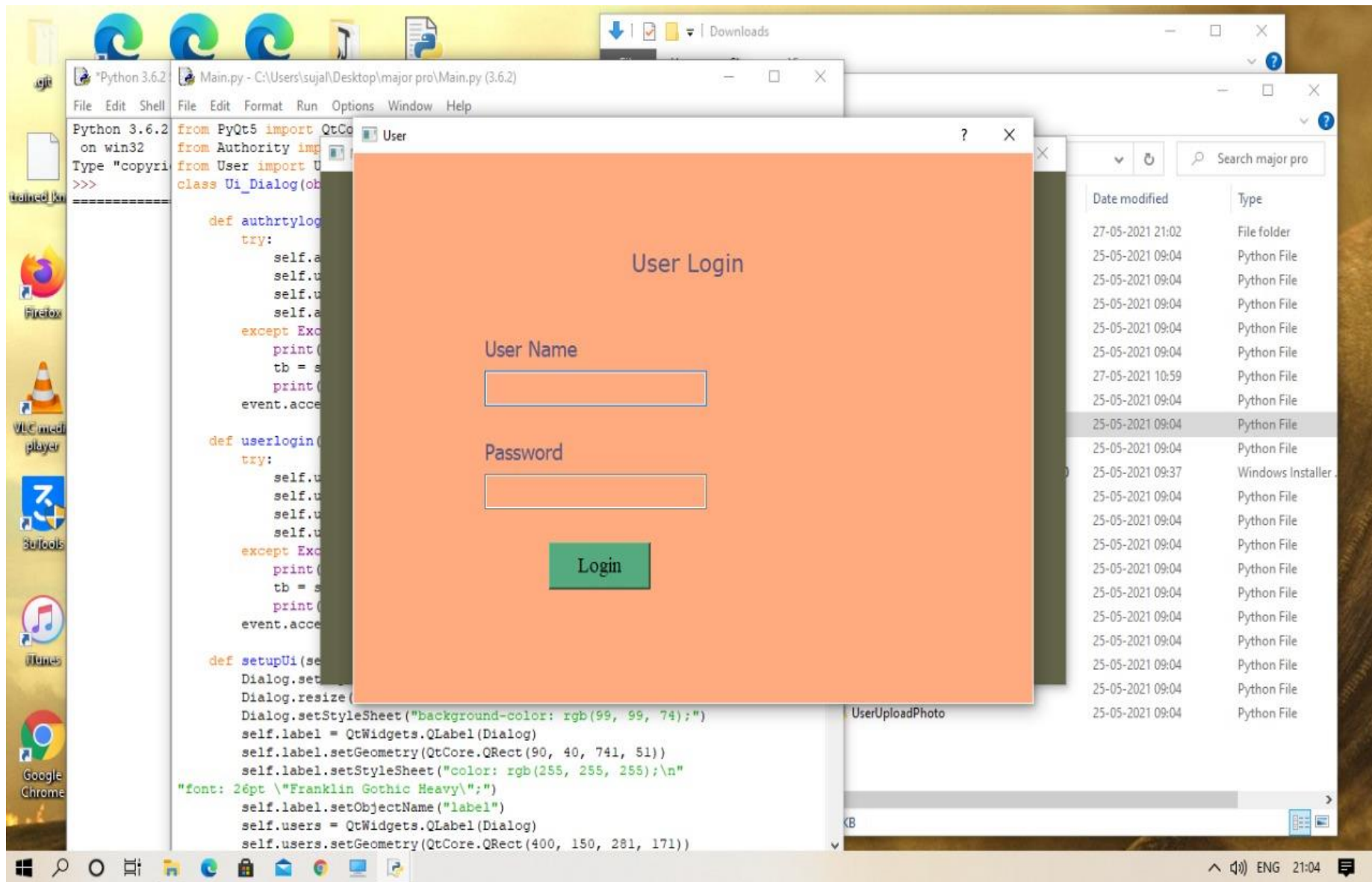
Login

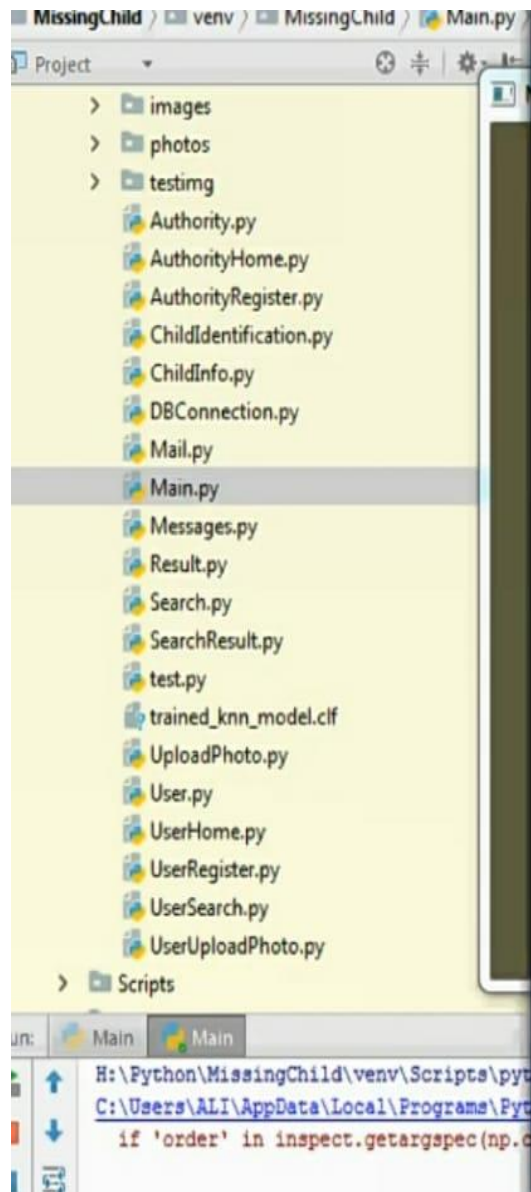
UserUploadPhoto

Date modified	Type
27-05-2021 21:02	File folder
25-05-2021 09:04	Python File
25-05-2021 09:04	Python File
25-05-2021 09:04	Python File
25-05-2021 09:04	Python File
25-05-2021 09:04	Python File
27-05-2021 10:59	Python File
25-05-2021 09:04	Python File
25-05-2021 09:04	Python File
25-05-2021 09:37	Windows Installer
25-05-2021 09:04	Python File
25-05-2021 09:04	Python File
25-05-2021 09:04	Python File
25-05-2021 09:04	Python File
25-05-2021 09:04	Python File
25-05-2021 09:04	Python File
25-05-2021 09:04	Python File
25-05-2021 09:04	Python File
25-05-2021 09:04	Python File

KB

Windows taskbar: Windows Start button, Search, Task View, File Explorer, Microsoft Edge, Firefox, VLC media player, 3uTools, iTunes, Google Chrome. System tray: Network, Volume, ENG, 21:04.





Register Here

Officer Name

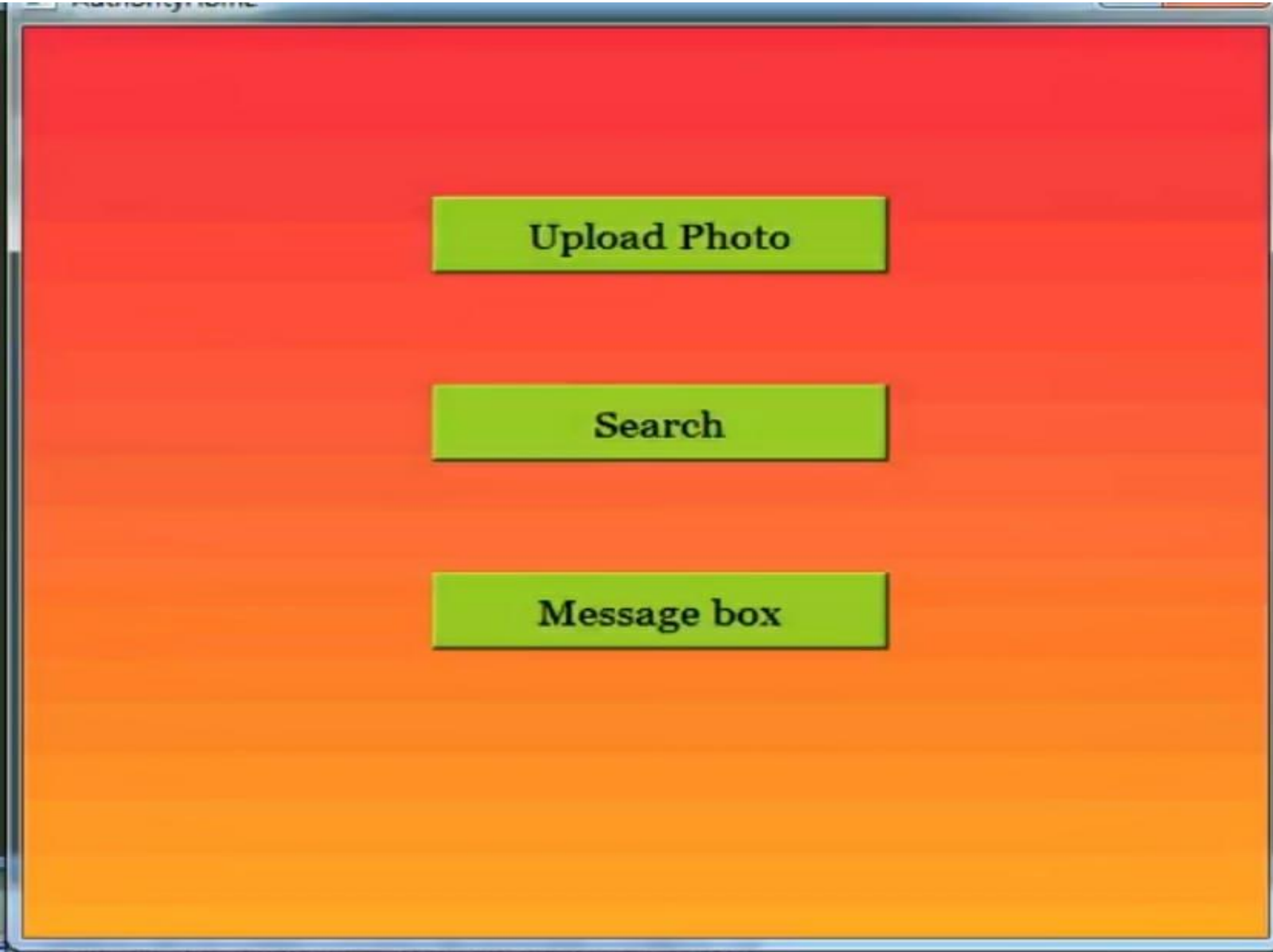
User ID

Password

Email

Mobile No.

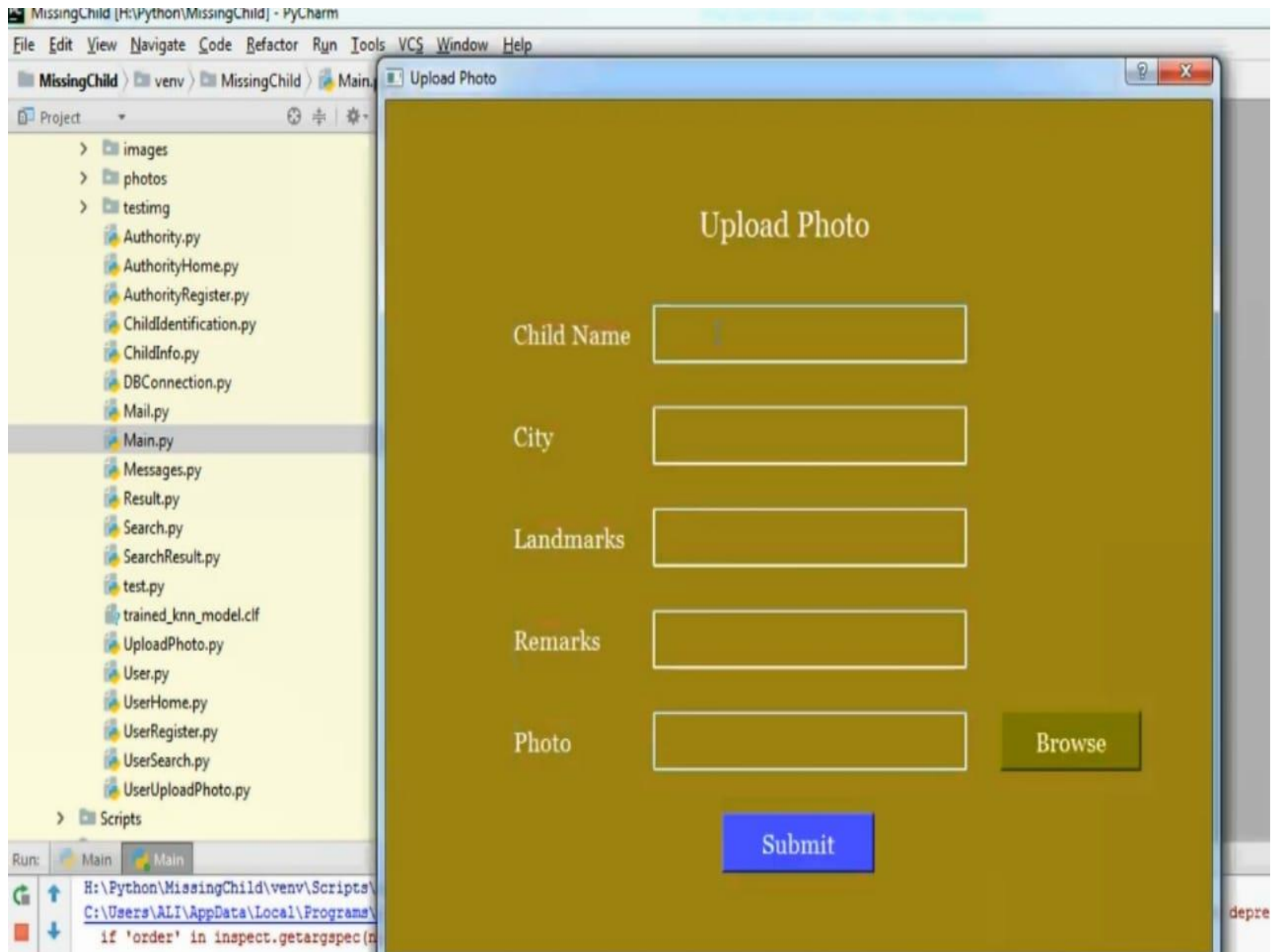


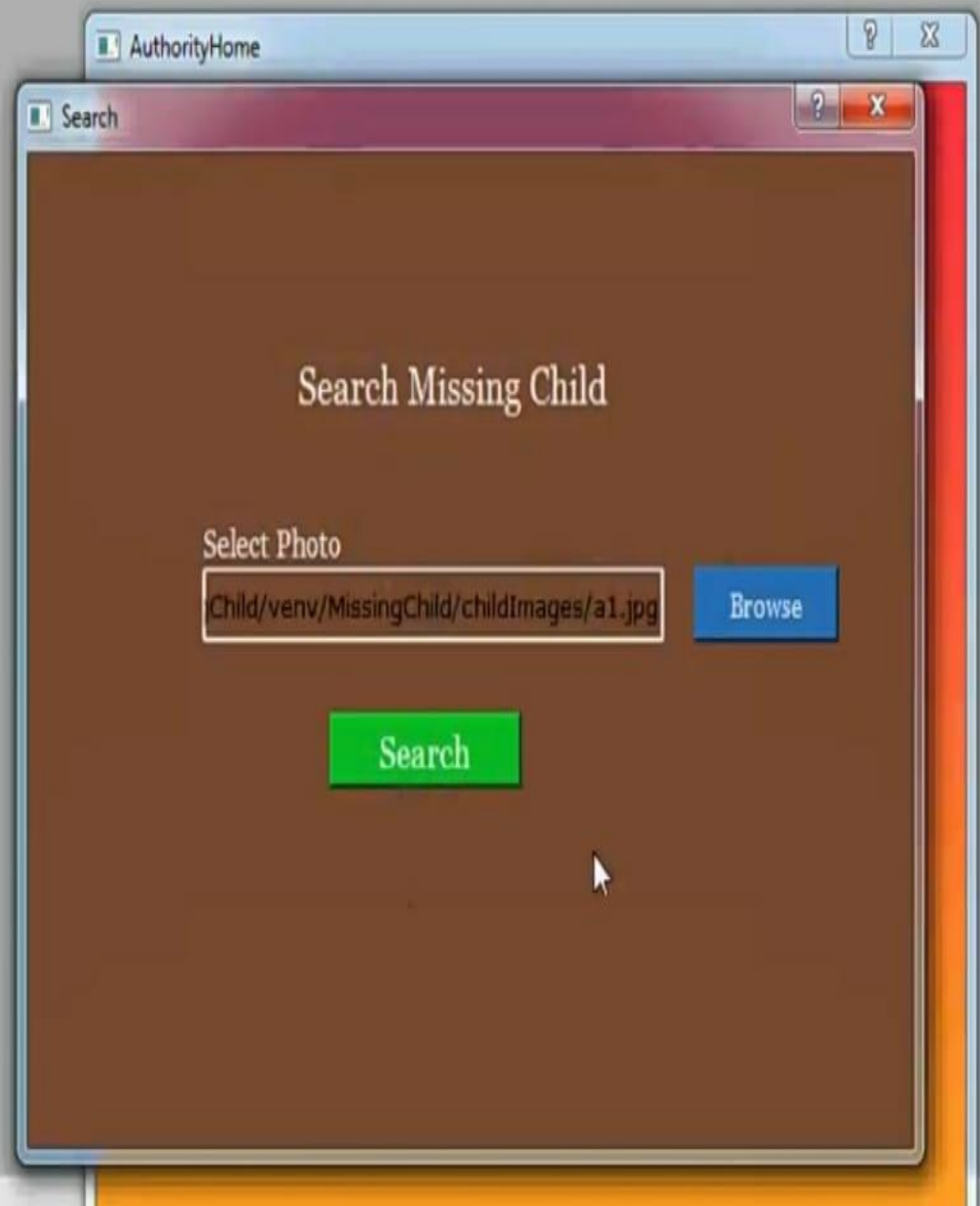
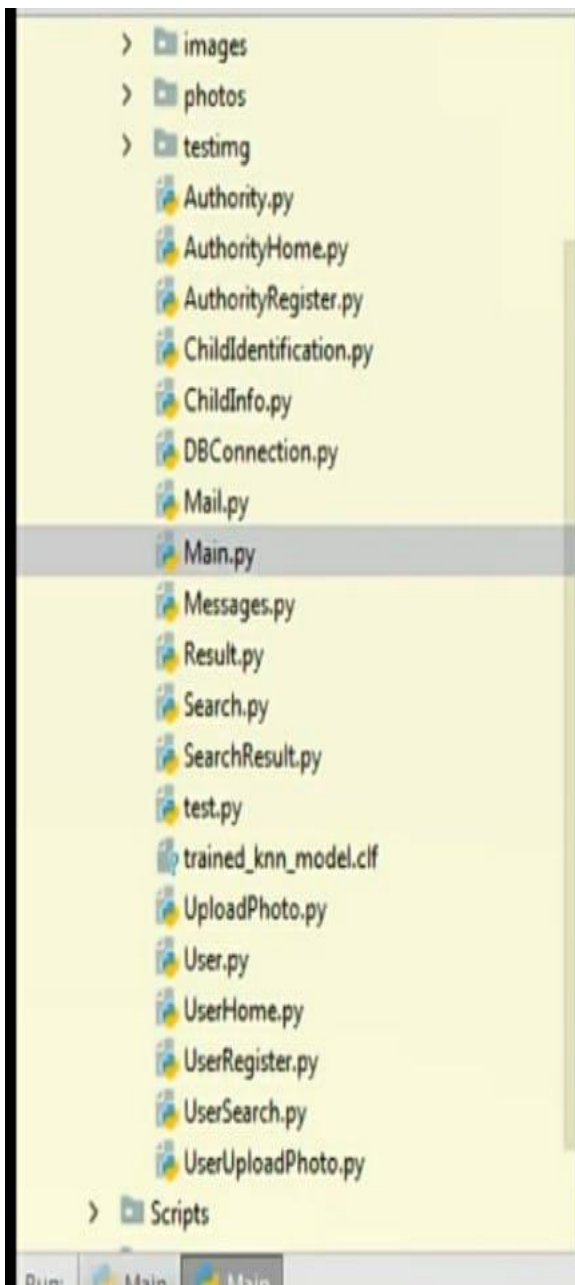


Upload Photo

Search

Message box





MissingChild

venv

MissingChild

ML

Dialog

Project

images

photos

testing

Authority.py

AuthorityHome.py

AuthorityRegister.py

ChildIdentification.py

ChildInfo.py

DBConnection.py

Mail.py

Main.py

Messages.py

Result.py

Search.py

SearchResult.py

test.py

trained_knn_model.clf

UploadPhoto.py

User.py

UserHome.py

UserRegister.py

UserSearch.py

UserUploadPhoto.py

Scripts

Run:

Main

Main


['rafi_2502']

rafi_2502


rafi.jpg

select mno from authority where uId= swamy

Searching Photo



Matching Found



Name : rafi

City : hyd

Landmarks : sr nagar

Remarks : red hair,yellow teshirt

Uploaded by : swamy(Officer)

Contact Number : 8121953811

SYSTEM CONFIGURATION

- **Hardware requirements:**
- Processer : Any Update Processer
- Ram : Min 4GB
- Hard Disk : Min 100GB
- **Software Requirements:**
- Operating System :Any Windows
- Technology :Python 3.6
- IDE :PyCharm
- Front-End :PyQt5
- BAcK-End :MySQL

Thank You