TRIBHUVAN UNIVERSITY
INSTITUTE OF ENGINEERING
PULCHOWK CAMPUS

The Catch

COURSE PROJECT ON DATABASE MANAGEMENT SYSTEM [CT 652].

SUBMITTED BY:
Anju Chhetri (076BEI005)
Ashma Yonghang (076BE005)

SUBMITTED TO:
Department of Electronics and Computer Engineering
Pulchowk Campus
Institute of Engineering, Tribhuvan University
Lalitpur, Nepal

Abstract

The main objective behind this project is to implement the concepts of Database Management System in real world scenario. It consist of two databases, one for storing user credentials and another for storing criminal records. We have also implemented image recognition for detecting criminal faces using YOLOv5 model, helping us integrate the concept of machine learning and DBMS in this project. To achieve this we used flask framework and sqlite database along with html and css for frontend.

Keywords: DBMS, Criminal Record, Image Recognition etc.

Acknowledgement

We would firstly like to acknowledge our teacher Lecturer Bibha Sthapit for assigning us with this project, helping us realize the importance of Database Management System in practical world. We are highly indebt for her guidance and supervision and also for providing necessary information regarding this project

We would also like to express our gratitude to our families for supporting and encouraging us during this time.

Contents

1 INTRODUCTION

1.1 Background

Inspired from movies on how a simple click would be able display all the information of the user, we tried to imitate such technology using our own ideas. Criminal database contains range of information on criminal like their personal information, crime details and their victim's information. This project is implemented from a user's perspective who can query for a criminal's data. It also uses a scan feature too which allows it to take picture at real time and use that picture to query the database. This was done using YOLOv5 model which utilizes PyTorch. The training for criminal dataset was done in google colab and the weights were then used locally.

1.2 Objectives

The major objectives behind this projected are as follows:

1. To have a basic understanding of database and how it can be implement.
2. To create a familiarity with various tools available in market for Database Management System.
3. To understand what happens under the hood of any Database Management System.

1.3 Limitations

1. User can only query the database.

2 ER Diagram

ER diagram of theCatch is given below:

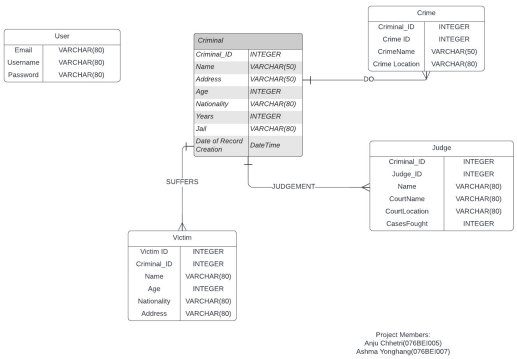


Figure 1: ER diagram of The Catch

3 METHODOLOGIES

As the main motive of this project was to be able to scan human face at real time and display the records of recognized face, this project was implemented in two phases as listed below

- Image recognition
- Database Implementation

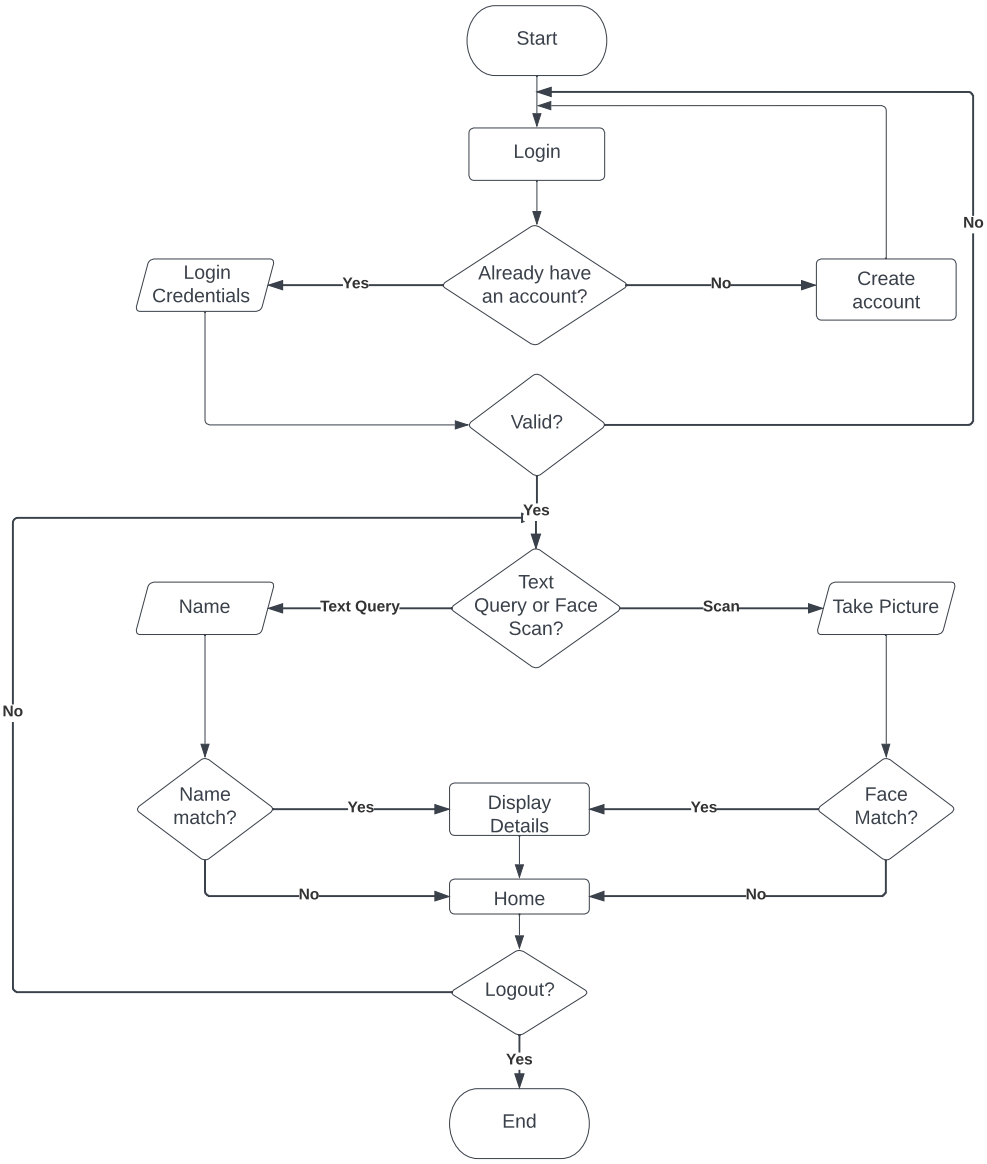
1. Dataset for criminal record was collected from our classroom. As this is an experimental project, we created a dummy dataset. The training was done in google colab and the weights were then downloaded into local device.
2. For database implementation we used SQLite. We used flask SQLalchemy which is object-relational mapper for the Python programming language.

3.1 Tools Used:

1. Backend Development: Flask Framework
2. Frontend Development: HTML and CSS
3. Programming Langauge: python
4. Database Engine: SQLite
5. Image Recognition model: YOLOv5 model

Due to shallow learning curve and the simplicity of our project we decided to go with flask framework.

3.2 Design Flowchart


Start
Login
Already have an account?
Yes
Login Credentials
No
Create account
No
Valid?
Yes
Text Query or Face Scan?
Text Query
Name
Scan
Take Picture
No
Name match?
Yes
Display Details
Yes
Face Match?
No
Home
No
Logout?
Yes
End

4 CONCLUSION:

In today's world of rapid technological growth and development, data has become an integral part of everyone's life. To utilize this data to its fullest it is important to store such data in proper and safe way. Database has allowed us to store data in an organized way and perform operations like read, write, delete and update data in more easy and efficient ways. This project helped us realize our theoretical database knowledge into some real world scenarios.