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UNIVERSITY BAREILLY

Invertis Instuite of Computer Applications

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Master of Computer Application
MCA

Project synopsis

on

SMART ATTEDENCE

Submitted To:
Mohd. Shakeel
Assistant. Professor
Invertis Institute of Computer Applications

Submitted By:
Shubham Sharma (1850204029)
Shubhneet Mishra (1850204005)
Prince Gupta (1850204014)

Problem – Statement

Maintaining attendance is very important in all learning institutes for checking the performance of students. In most learning institutions, student attendances are manually taken by the use of attendance sheets issued by the department heads as part of regulation. The students sign in these sheets which are then filled or manually logged in to a computer for future analysis.
This method is tedious, time consuming and inaccurate as some students often sign for their absent colleagues. This method also makes it difficult to track the attendance of individual students in a large classroom environment. In this project, we propose the design and use of a face detection and recognition system to automatically detect students attending a lecture in a classroom and mark their attendance by recognizing their faces.
While other biometric methods of identification (such as iris scans or fingerprints) can be more accurate, students usually have to queue for long at the time they enter the classroom, but this is not the case with face recognition.

Why is the particular topic chosen?

This project serves to automate the prevalent traditional tedious and time-wasting methods of marking student attendance in classrooms. The use of automatic attendance through face detection and recognition will increase the effectiveness of attendance monitoring and management.
This method could also be extended for use in examination halls to curb cases of impersonation as the system will be able to single out the imposters who won't have been captured during the enrollment process. Applications of face recognition are widely spreading in areas such as criminal identification, security systems, image and film processing]. The system could also find applications in all authorized access facilities.

Objective and Scope of the project

The overall objective is to develop an automated class attendance management system comprising of a desktop application to perform the following tasks:

- To detect faces real time.
- To recognize the detected faces by the use of a suitable algorithm.
- To update the class attendance, register after a successful match.
- To design an architecture that constitutes the various components working harmoniously.

We are setting up to design a system comprising of a desktop application that does face recognition of the captured images (faces) in the file, marks the students register and then stores the results for future analysis.
The scope of the project is as follows: -

- Provides facility for the automated attendance of students.
- Uses live face recognition to recognize each individual and mark their attendance automatically.
- Utilizes video and image processing to provide inputs to the system.

Hardware & Software Specifications

Software Requirements

- Python 3.3+ or Python 2.7
- Linux or Windows OS

- Installed Libraries- Numpy, Tkinter, PlaySound, xlwrite, OpenCV, eigen-faces, eigen-vectors , os .

Hardware requirements

- Windows or Linux PC
- WebCam
- 512 MB RAM
- Hard Disk : 40 GB minimum.

Contribution of individual team member

Shubham Sharma – Training Datasets, Recognizer, firebase1.
Prince Gupta – Index Page, Attendance Fetching, xlwrite1.
Shubhneet Mishra – Datasets Capture, Developer's page, xlwrite1.

DFD and ERD

A data flow diagram (DFD) is a graphical representation of the "flow" of data through an information system, modelling its process aspects. A DFD is often used as a preliminary step to create an overview of the system without going into great detail. DFDs can also be used for the visualization of data processing (structured design). An entity–relationship model describes interrelated things of interest in a specific domain of knowledge. A basic ER model is composed of entity types and specifies relationships that can exist between entities. Fig 4 Shows the ERD for our project.

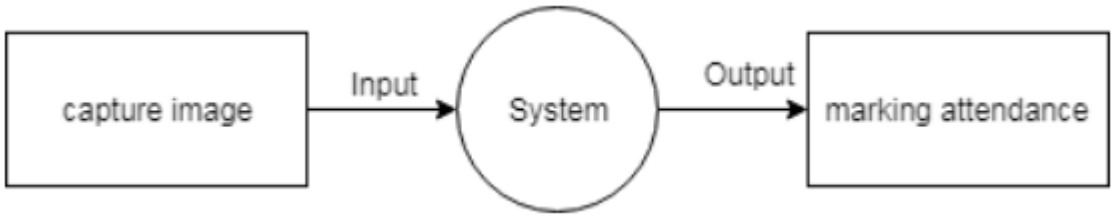

Fig 1: Level – 0 DFD

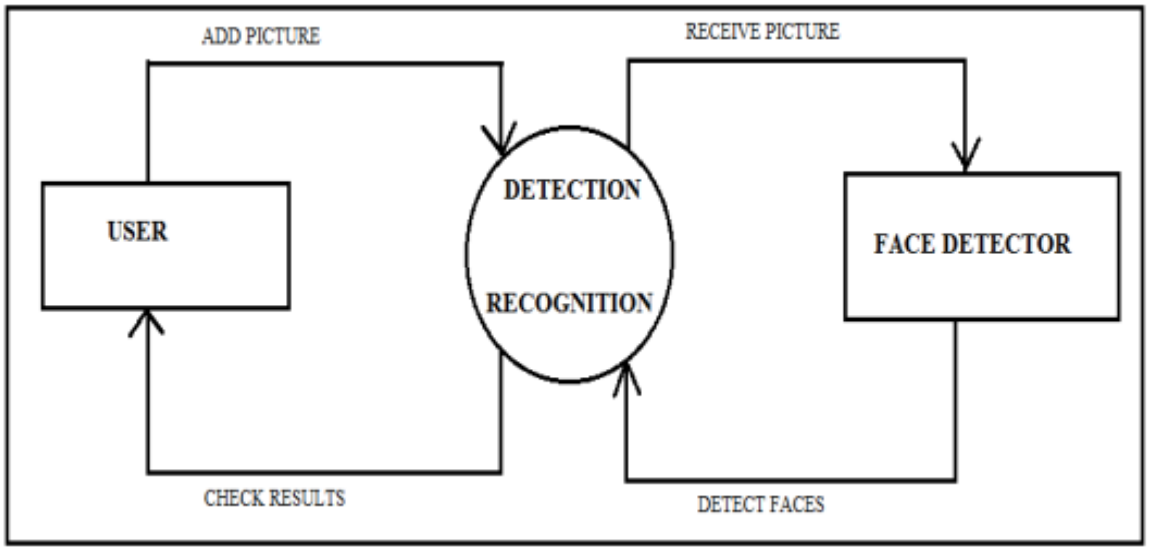

Fig 2: Level – 1 DFD

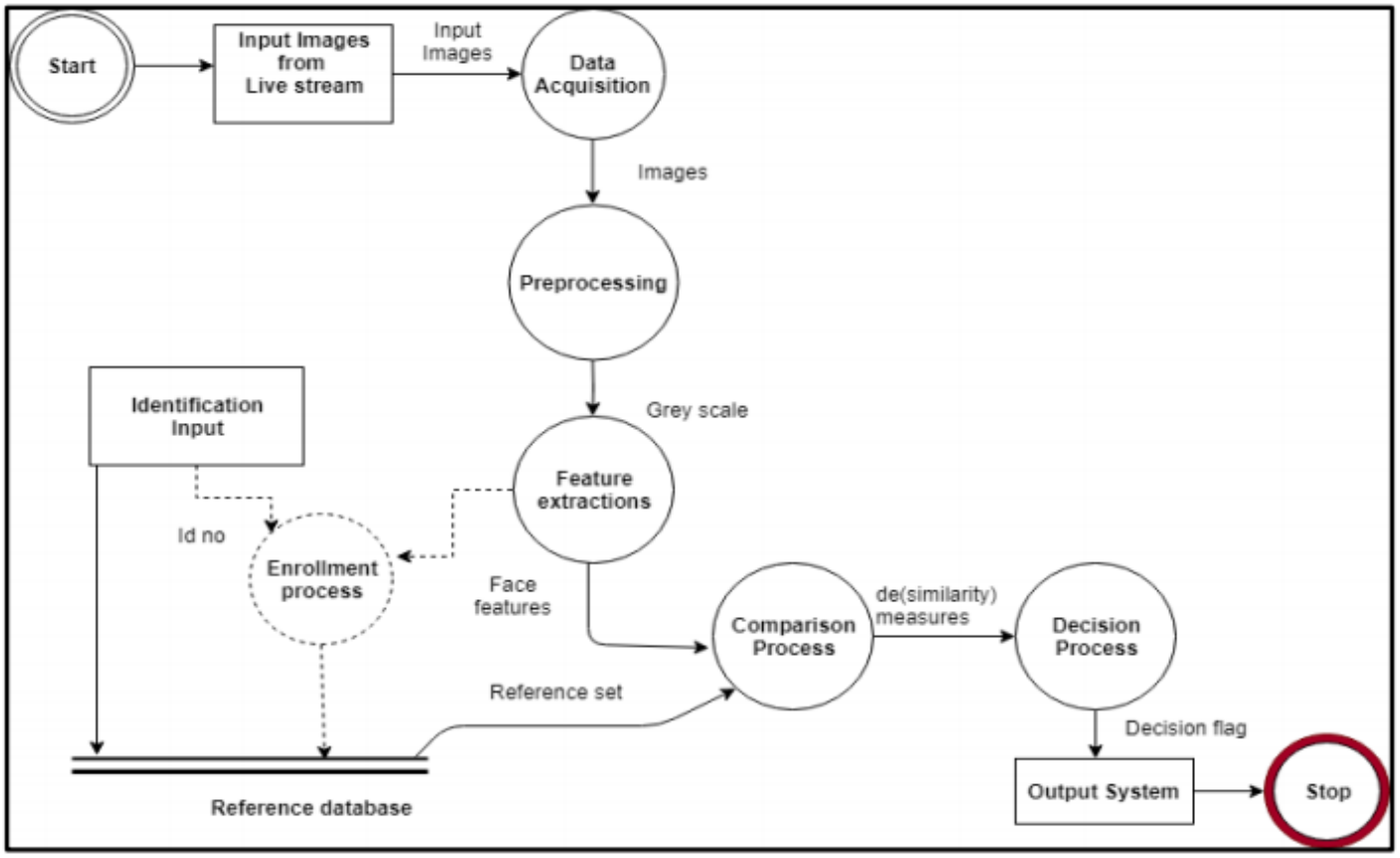

Fig 3: Level – 2 DFD

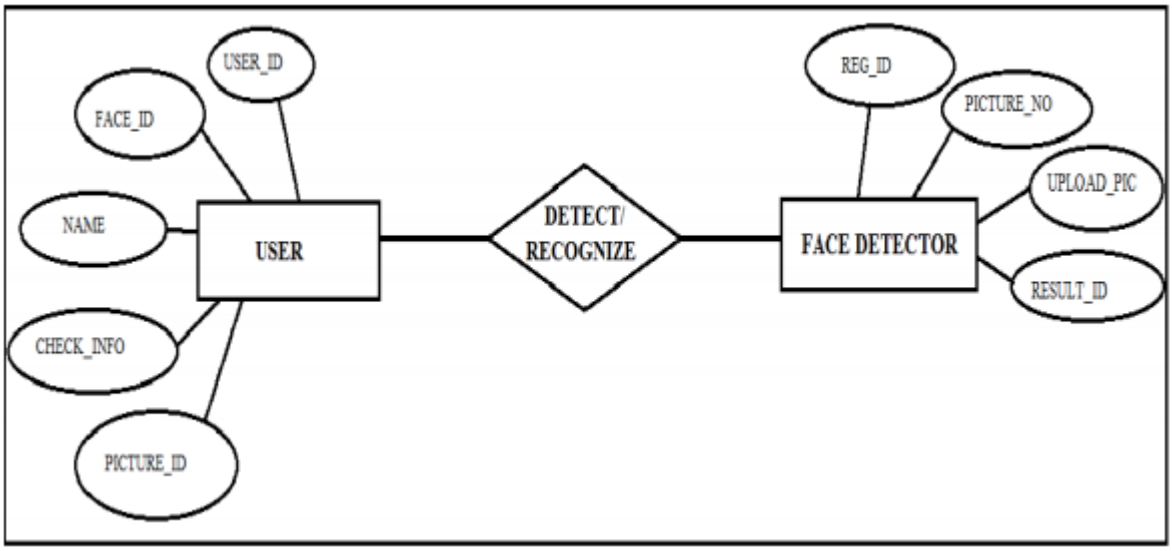

Fig 4:ER Diagram

Reference/Bibliography

- Beymer, D. and Poggio, T. (1995) Face Recognition From One Example View, A.I. Memo No. 1536, C.B.C.L. Paper No. 121. MIT

- de Haan, M., Johnson, M.H. and Maurer D. (1998) Recognition of individual faces and average face prototypes by 1- and 3- month-old infants. Centre for Brain and Cognitive

- Python for Data Analysis: Data Wrangling with Pandas, NumPy, and IPython. California: O'Reilly Media. Phillips, D. (2014).

- Automate the Boring Stuff with Python: Practical Programming for Total Beginners. San Francisco: William Pollock. Ulloa, R. (2015)