**3 . SYSTEM SPECIFICATION**

**3.1 SOFTWARE REQUIREMENTS**

* Operating System : Windows 10
* Language Used : Python
* Backend : MySQL5
* UI Design : Python
* Tool : Visual Studio

**3.2 HARDWARE REQUIREMENTS**

* Processor : Intel i3 or above
* Hard disk : 20 GB or higher
* RAM : 4GB
* Monitor : 17”color Monitor
* Mouse : Microsoft
* Keyboard : Microsoft multimedia keyboard

**4.SYSTEM DESIGN**

**4.1 Context Level Diagram**

Request

User

Response

**4.2 Data Flow Diagram**

Level 1 DFD

Get the training details

Display

View details

View details

Get the image details

Get the recognition details

Trainer.yml

Level 2 DFD for Training:

Face image

Get image details

Get the image capture

View the image details

Haar cascade-frontal face-default.xml

Get the image

Detect face

Get the image details

Get face image

Get face features

display

Trainer.yml

View the face

View the features

Get the features

Level 2 DFD for Face Recognition:

Get the image

Get image face

Haar cascade-frontal face-default.xml

View the face details

Get the face details

Get local binary pattern

Pattern matching

Get matching details

View the match details

Generate histogram

analysis

Trainer.yml

Compare features

Get the best image

display

.

View the extracted features

View details

**4.3 E R Diagram:**

Attendance

have

Student

views

Admin

**4.4 Data Base Design:**

Table: Face\_recognition\_fill

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Name | Data type | Size | Constraints | Description |
| Id | Number | 10 | Primary key | Student Id |
| Enrol No: | Number | 10 | Not Null | Enrolment Number |
| Name | Varchar | 30 | Not Null | Student name |
| Date | Varchar | 20 | Not Null | Date of Attendance |
| Time | Varchar | 8 | Not Null | Time of Attendance |

**4.6 Design of each Subsystem**

Face Recognition

Training Phase

Image Capture

Histogram generation

Image Pre-processing

Face Detection

Grayscale conversion

Image Scaling

Save to Dictionary

Feature Extraction

Save to Dictionary

Recognition Phase

Image Capture

Get dictionary features

Image Pre-processing

Feature identification

Check image properties

Feature matching

Check Histograms

Face Recognition

Match Dictionary

Message

**4.7 Use Case Diagram**

User