**Project**

**Modules**

1. **Class Modules** – That defines a class or a data type and operations on that class

2. **Utility Modules** – That defines functions on previously defined data type

**Classes and their attributes**

1. **Face: Two distinct faces of same person(album) will be considered as distinct.**
   1. **Id:** Unique identification
   2. **Image Id:** Image from which it is extracted
   3. **Face Data(signature)**: A matrix containing facial features
   4. **Recognized:** True or False. Whether the face has been allotted to a specific album. Only useful if face allotment is unique
2. **Image**
   1. **id**
   2. **location:** A string containing location of the image
   3. **\_\_imgdata\_\_:** An image file loaded by opencv. The users must use imgdata() method to access \_\_imgdata\_\_.
   4. **loaded:** True of false. Whether the image has been loaded from the location or not
   5. **scanned:** True of False. Whether the image has been scanned for face detection
   6. **faces:** None if scanned is false. Otherwise, a list of Faces detected in this image
   7. **imgdata():** A method that provides image loaded by opencv. Supports lazy loading.
   8. **\_\_unload\_\_():** The \_\_imgdata\_\_ is set to None and loaded is set to False. Use this to save memory.
3. **Album – An album is associated with a unique person**
   1. **Id**
   2. **Name:** A name for the album. Set by the user.
   3. **Faces:** A list of faces that belongs to that person
   4. **Hidden:** Whether the album is visible in the GUI
   5. **FR Parameters:** A set of parameters used by the Facial Recognition model to recognize this person

GUI

Image Manager

Album Manager

Load Images

Unscanned Images

Scanned Images with faces

Scanned Images

Album/Scanned image

Matching result

Album display and manipulation

Save/Load

**Matching Result:**

1. **Single match –** Add that image to the album
2. **Multiple match –** Conflict Resolution
3. **No match –** Create a new album

**GUI Features:**

1. Load and Save Images
2. Image Viewer with tagging support
3. Thumbnails
4. A pane (or side-panel) to view albums
5. A way to show progress/waiting during face detection and face recognition
6. Save/Load album information
7. Option to rescan
8. Option to add-more images/image locations to our previously created albums and scan them
9. (Optional) Find common images between albums (AND, OR operations)

**Directory Structure**

1. **gui** – Contains all the GUI modules
2. **engine –** Contains the following modules
   1. **Image**
   2. **Face**
   3. **Album**
   4. **image\_manager**
   5. **face\_detection**
   6. **face\_recognition**
   7. **album\_manager**
3. **data –** Contains data
4. **Design –** This file
5. **Readme**