

LIBRARY MANAGEMENT USING FACE DETECTION

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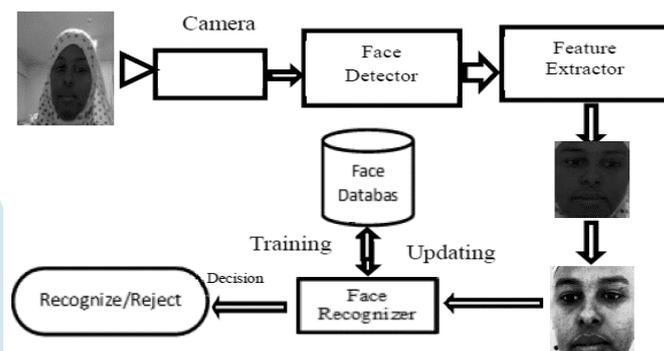
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INTRODUCTION:

Face recognition works by using a combination of facial recognition algorithms and computer vision technology to compare facial features in an image or video with a digital database of known faces. The computer vision technology is used to detect and analyze the facial features in the image or video, such as the eyes, nose, and mouth. The facial recognition algorithms then compare the facial features to those stored in the digital database and create a match if one is found. If a match is not found, the system will alert the user or security system that no match was found.

There are many previous works on Face Recognition Security Systems but a robust solution that will address the deficiencies of the current FRS remains exclusive. In this research, Eigen Faces and LBP face recognition algorithms were used to develop and implement a Window based application that is capable of solving these challenges and problems. Individually, LBP algorithm has given satisfactory results. However, LBP algorithm shows greater promise & performance better under different lighting conditions that affect the recognition process. Hence, it is only rational to use LBP algorithm to give superior results.

Processing of Library data is a task which refers to library systems which are generally small or medium in size. It is used to manage the library using a computerized system where he/she can record various transactions like issue of books, return of books, addition of new books, addition of new students etc. The validations for user issuing the books are mainly done by the ID Cards consisting of Barcodes. Being the SPhysical Token it has the possibility of getting misplaced or misused. We Propose the Integration of Face Recognition technique for the Validation of the user performing the transaction.



Automation of Library:

This application was designed to automate the library process. It offers convenience to members and students in finding the books they need, while providing librarians & administrators with the capability to issue & return these books with ease. Furthermore, it enables them to create and delete student memberships. The Library Management System contains four core modules. These include the Database Insertion Module, which features an easy-to-use input screen, the Database Extraction Module that offers attractive and stylish output screens, the Report Generation module that provides lists of borrowed and available books, and finally comes the Search Facility system. This book placement system assigns specific codes to books to make it easier for librarians to locate them during manual searches. The purpose of this is to improve the overall performance of library systems.

Implementation:

Facial recognition technology can detect facial images and store the related information in a database. This allows you to have this data on hand for future reference and use.

Face SDK enables you to easily load images from multiple sources such as files, buffers, and HBITMAP handles. Additionally, it allows you to quickly save the images from its internal representation to the same sources.

When it comes to recognizing multiple levels on large images it is recommended to first reduce the image size for quicker processing of data. It is crucial to remember that you have to resize the image to a minimum size that matches the Internal Resize Width parameter of the FSDK Set Face Detection Parameters function when doing face detection in order to achieve accurate results.



It features the Face Position data type that stores vital information about the face's positioning. This includes the xc & yc fields which indicate the X and Y coordinates of the face's center, w for its width, and angle for its in-plane rotation angle in degrees. A template uprooted from a face can be stored in a database and can also be used to match faces. The created template will have advanced delicacy, therefore allowing for better overall recognition rates (lower false rejection position at the same false acceptance position). If your precedence is advanced speed, still, the delicacy of the template will be lower in this case. You may consider similarity to be equal to the probability that templates belong to one and same person. Traditionally Library systems uses pupil's ID card for issuing books. The Current styles are monotonous & time consuming. The proposed system consists of a Face Recognition

Result Analysis:

We have implemented Face Recognition Mechanism by using Local Binary pattern for Library Management System.

To issue the book students' face will be captured and classified to compare it with the database, if match found the further process of book issue can be carried out.



Till now the accuracy of the system is almost 100%, as all the transactions performed have given accurate results.

It is obvious that the result of our Face Recognition system is good as compared to the existing model but still there is scope of improvements.

Conclusion

In this project the whole accomplishment is an effort to understand how face Recognition is used as a form of biometric to recognize identities of human beings. It includes all the stages from minutiae extraction from face to minutiae matching which generates a match gain. Various techniques are used in the intermediate stages of processing. The reliability of any regular Face Recognition system strongly relies on the precision obtained in the minutia extraction process. Face recognition is performed using Luxand Face SDK.

Future Scope

In Future we can improve the algorithm for multiple face matching simultaneously. Secondly the system can be improved and implemented as an android app for making it easier to access.