FORENSIC FACE SKETCH CONSTRUCTION AND RECOGNITION

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Keywords:

Forensic Face Sketch, Face Sketch Construction, Face Recognition, Criminal Identification, Deep Learning, Machine Locking, Two Step Verification.

Introduction:

In this modern age, the overall crime rate is increasing day-by-day and to cope up with this the law enforcement departments too should find ways that would speed up the overall process and help them in bringing one to justice. One such way can be using face recognition technology for identifying and verifying the criminal. The traditional approach here is to use the hand-drawn face sketches drawn by forensic sketch artist to identify the criminal, modernizing this would mean using the hand-drawn sketch and then matching them with the law enforcement departments database to identify the criminal. Using this approach would result in the various limitations with latest technologies and even would be time consuming as there are very few forensic sketch artists available when compared to the increasing crime ratio. Our project is aimed on decreasing the time span and speeding up this process by providing a standalone platform to the law enforcement department which would allow users to create accurate face sketch of the suspect without the help of forensic sketch artist and no special training or artistic skills. The sketch can be created using drag and drop feature in the application with variety of face elements and can automatically match the drawn composite face sketch with the law enforcement department database much faster and efficiently using deep learning and cloud infrastructure.

Objectives:

1. Make the face sketch construction fast.
2. To recognize whether the same criminal has done the crime again or not and get the details of the criminal faster rather than searching the names in the files.
3. To make the work of the artist very easy and convenient by making use of the latest technologies available in the market and find the criminal information easily from the database.
4. Use the Amazon Web Services to take out the details of the criminal and use "Amazon Rekognition" module to match the sketch with the original face.

Methodology:
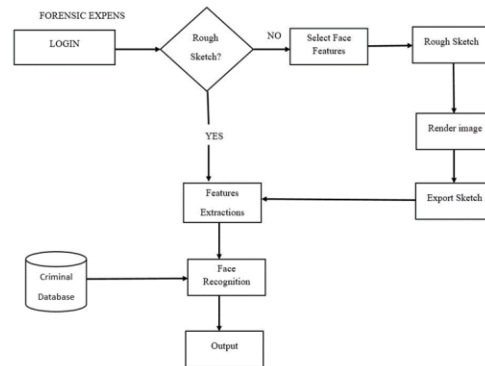
Results and Conclusion:

1. The Project 'Forensic Face Sketch Construction and Recognition' is been designed, developed and finally tested keeping the real-world scenarios from the very first splash screen to the final screen to fetch data from the records keeping security, privacy and accuracy as the key factor in every scenario.
2. The accuracy of the face matching is very high.
3. The platform even has features which are different and unique too when compared to related studies on this field, enhancing the overall security and accuracy by standing out among all the related studies and proposed systems in this field.
4. The platform even showed good accuracy and speed while face sketch construction and recognition process, provided an average accuracy of more than 90% with a confidence level of 100% when tested with various test cases, test scenario and data sets, which means a very good rate according to related studies on this field.
5. The platform displayed a tremendous result on Security point of view by blocking the platform use if the MAC Address and IP Address on load didn't match the credentials associated with the user in the database and later the OTP system proved its ability to restrict the use of previously generated OTP and even generating the new OTP every time the OTP page is reloaded or the user tries to relog in the platform.

Scope and Future Work:

1. The accuracy can be more enhanced with the latest algorithms which might come in future.
2. This project is very useful in forensic field where the face sketch construction can be made very easily by using this app.
3. Our project is aimed on decreasing the time span and speeding up this process by providing a standalone platform to the law enforcement department which would allow users to create accurate face sketch of the suspect without the help of forensic sketch artist and no special training or artistic skills.

4. Face recognition in automobiles works on a simple and non-obtrusive principle. After a driver enrolls into the system, the system "remembers" them. Each time they enter the vehicle again, the system "recognizes" them and gives them access to predefined functionalities such as permission to start the car. Similarly the face sketch is also very useful in the future because it saves the sketch made for longer time and the artist don't have to draw the sketch again and again.