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**Synopsis of MajorProject**

By

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1.Name / Title of the Project

Male-Female Face Detection using Machine Learning

2.Problem Statement

Understanding the concepts of Machine Learning, open CV.The goal of this project is to detect and recognize human faces and classify them in a color image.

3. Motivation

* Face recognition has just started its journey on mobile systems for locking and unlocking devices, fingerprint scanners have already been accepted in all mobile platforms
* It can be improved as there is still scope of accuracy gap.
* All the upcoming technologies would be more secure and easy to use if facial recognition is implemented.
* All the social platforms are already working on facial recognition and how to improve it.
* It’s being used in many institutes to confirm student identity during online exams

4. Tools used:

* **OpenCV:** (*Open Source Computer Vision*) is a library of programming functions mainly aimed at real-time computer vision.
* **Support vector machines:** SVM are supervised learning models with associated learning algorithms that analyse data used for classification and regression analysis.
* **Principal component analysis:** (PCA) is a statistical procedure that uses an orthogonal transformation to convert a set of observations of possibly correlated variables into a set of values of linearly uncorrelated variables called principal components.
* **Scikit-learn:** is a free softwaremachine learninglibrary for the Python programming language. It features various classification, regression and clustering algorithms including support vector machines, random forests, gradient boosting, *k*-means and DBSCAN, and is designed to interoperate with the Python numerical and scientific libraries NumPy and SciPy.

5. Scope of the project:

* Face recognition systems used today work very well under constrained conditions, although all systems work much better with frontal mug-shot images and constant lighting. All current face recognition algorithms fail under the vastly varying conditions under which humans need to and can identify other people. Next generation person recognition systems will need to recognize people in real-time and in much less constrained situations.
* Being able to detect and recognize human faces and classify them is essential for robots in a variety of applications such as home security and surveillance, as well as personalization and natural user-robot interaction.
* Cameras and microphones today are very small, light-weight and have been successfully integrated with wearable systems. video-based recognition systems have the critical advantage that they use the modalities humans use for recognition.
* Identification systems that use face recognition and speaker identification seem to us to have the most potential for wide-spread application.