

Progress Presentation-I

e-Yantra Summer Internship-2015

Attendance System using Face Recognition

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IIT Bombay

June 16, 2015

Overview of Project

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Overview of
Project

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Challenges Faced

Future Plans

Demo and
Questions

■ **Project Name:**

Attendance System using Face Recognition

■ **Objective:**

Using image processing system which detects and recognizes number of people present at any time in a room. The system will have a camera mounted at a fixed point that will capture images whenever a human is detected

■ **Deliverables:**

1. Basics of image processing
2. Classifier training
3. Face detection
4. Face recognition
5. Future Scope

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Demo and Questions

Sr. No.	Contents	No.of days
1.)	Setup and Installation	1 day
2.)	Study of basics of Open CV and Python	3 days
3.)	Contour, edge, face detection	3 days
4.)	Training datasets and testing them for object detection, creating xml files	5 days
5.)	Studying different techniques of face recognition	2 days
6.)	Face recognition using Haarcascades, LBPH and other techniques	5 days
7.)	Making database and implementing the same for eYantra	4 days
8.)	Interfacing with sensor	2 days
9.)	Making GUI for auto-logging system	4 days
10.)	Improvisations and Final Documentation	6 days

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Classifier training

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- Trained our own classifier to detect cars
- Used haar cascades
- Used online available database
- Also trained a bottle detector using our own database



Face Detection in Image and Video

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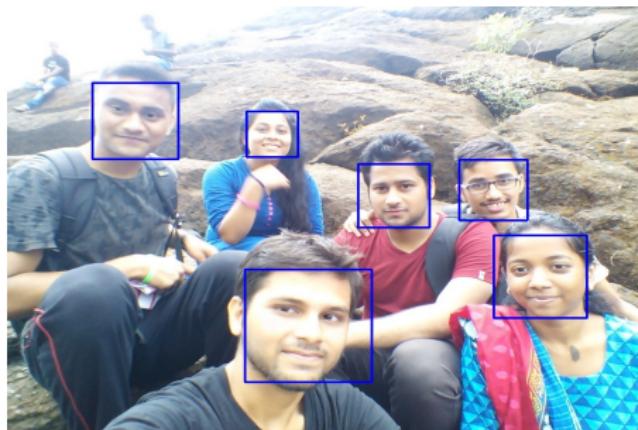
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Future Plans

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- Principal Component Analysis
- Neural networks
- Wavelets



Face Recognition

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- Three methods of face recognition
 - Eigenfaces
 - Fisherfaces
 - LBPH
- Used OpenCV inbuilt function `cv2.createLBPHfaceRecognizer()` for the project

Face recognition example 1

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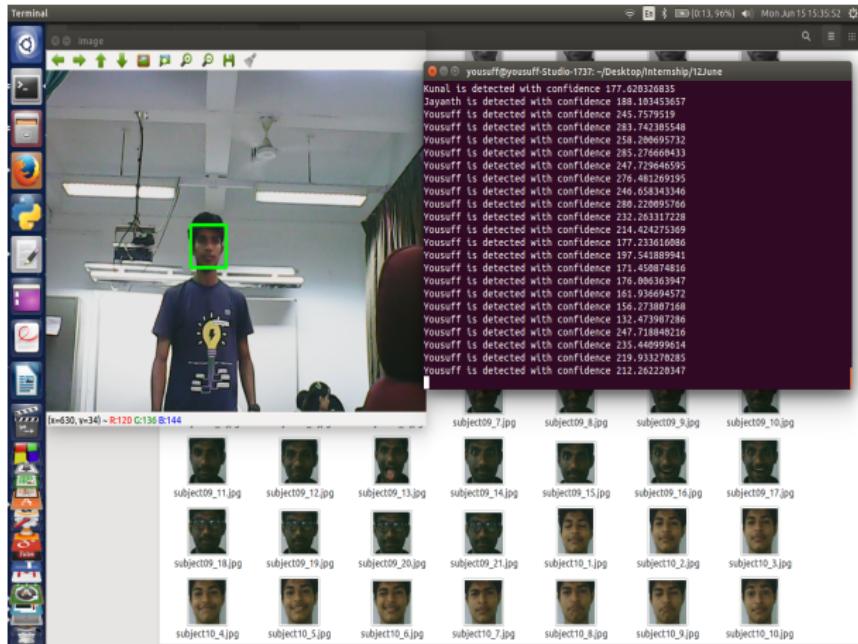
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Face recognition example 2

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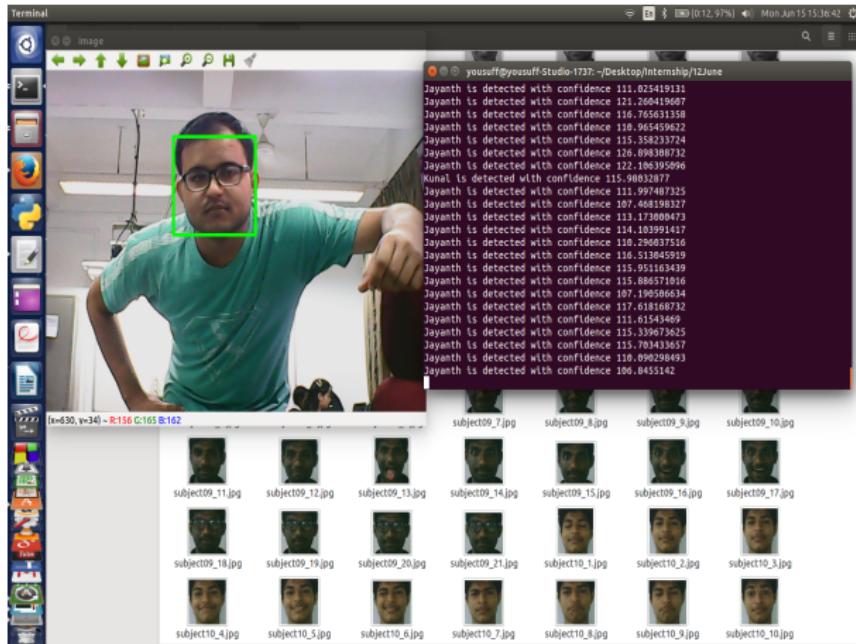
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- Sensitive parameters to the function for face detection.
- Building a face database
- Detection algorithm weakness
- Recognition inaccuracy

Sensitive parameters to the function for face detection

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- `facesInInputImage =
faceCascade.detectMultiScale(inputImage, scale, minNeighbours)`



Building a quality face database

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- Taking pictures
- Renaming and organizing
- Cropping the pictures for only face information



Weakness of Viola Jones Algorithm

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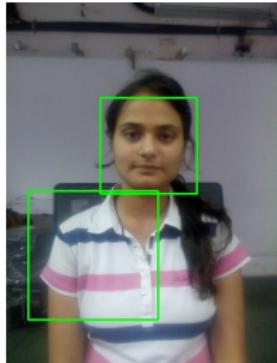
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- Light intensity variations
- Different results with different cameras

Low accuracy of recognition

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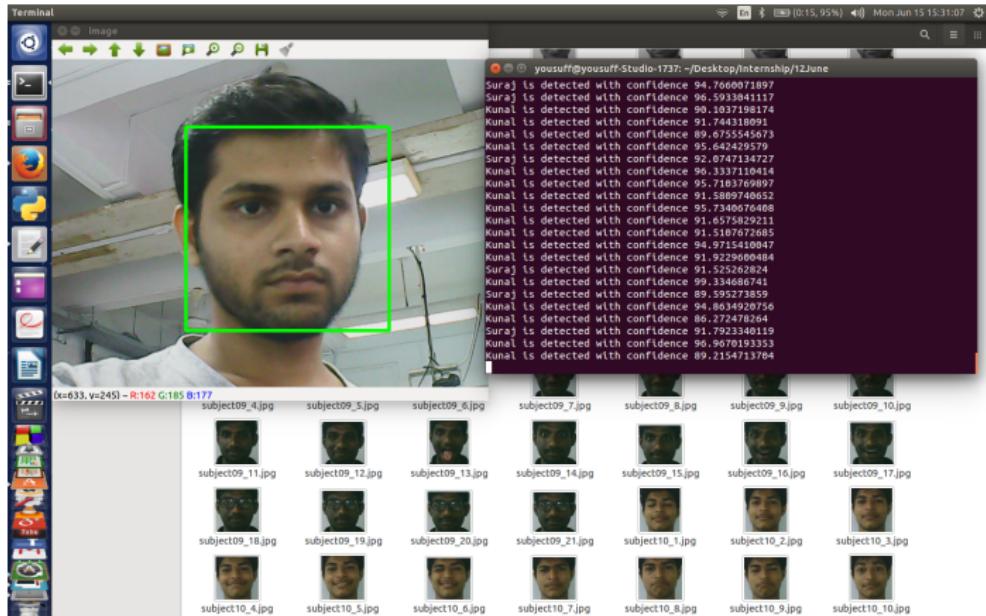
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- Improving the quality of recognition
- GUI for the logging system
- Integration of the PIR motion sensor to trigger the system
- Weight and height integration for reliability

Demo and Questions

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