

A Smart Admission Enquiry Chatbot Using Human Face and Speech Recognition

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ABSTRACT: In the growing world of artificial intelligence, every process are made easy and smart. In the proposed system, we automated the college admission and enquiry process through artificial intelligence. The face recognition module enhances the process of admission of new students and their updates to database. Similarly, the chatbot embedded in application to enhance the process of enquiry made by students. The proposed system is developed as a real time web application with Python and Flask and MySQL as database server. This application provides answer to the query asked by the new users. The students can ask queries to the Chatbot about the basic details and the admission process of the college. The user has to register their personal details for the admission purpose that can be viewed by the admin. It capture the users face in multiple angles and uses it for face recognition.

I. INTRODUCTION

With quickly expanding registering limit and the accessibility of ongoing identification hardware and advancements, of examination and portrayal, PCs are turning out to be increasingly astute. Many research tasks and business items have exhibited the capacity of a PC to communicate with people in a characteristic manner by taking a gander at individuals through cameras, tuning in to residents through amplifiers and so on. One of the essential procedures that permits such collaboration is face recognition. The other application too compelling is chatbot. These two are joined in our application to make it viable for school confirmation.

Face discovery, consequently, decides the areas and sizes of human faces present in discretionary (advanced) pictures. It distinguishes facial gadgets and disregards whatever else, for example, structures, trees, bodies, and something besides the face. In spite of the fact that this gives off an impression of being an inconsequential assignment for people, it is an amazingly troublesome undertaking for PCs, and has been one of the most examined explore points in ongoing decades. The trouble related with face recognition can be ascribed to numerous varieties in scale, area, direction, present, outward appearance, impediments and lighting conditions.

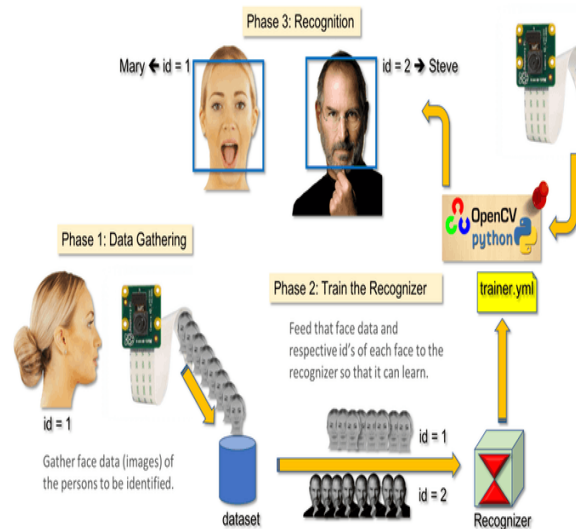


Figure 1: Overall Architecture of Face Recognition

Face acknowledgment is the study of setting up the character of an individual dependent on the physical, synthetic or social characteristics of the individual. The importance of biometrics in current society has been fortified by the requirement for enormous scope personality the executives frameworks whose usefulness depends on the precise assurance of an individual character with regards to a few distinct applications. Basic face discovery and acknowledgment frameworks comprise of single course picture obtaining module with one camera. A face acknowledgment framework utilizes a database of pictures and thinks about another picture against those to discover a match, on the off chance that one exists. AI (ML) is a part of software engineering that is worried about planning frameworks that can gain from the gave input. Typically the frameworks are intended to utilize this educated information to all the more likely procedure comparative contribution to what's to come. A ML calculation is one that can gain for a fact (watched models) as for some class of assignments and a presentation measure. Arrangement which is additionally alluded to as example acknowledgment, is a significant assignment in ML, by which machines "learn" to consequently perceive complex examples, to recognize models dependent on their various examples, and to settle on savvy choices.

II.APPLICATION AREAS

This innovation is inescapable in numerous applications in picture ordering and data recovery, where it very well may be utilized to look through pictures containing individuals, consequently partner a face with a name in a site page, distinguish the primary individuals in a video by grouping. It can likewise be utilized to decide a client's consideration, for instance confronting a screen in the open space, which can likewise, when the face is distinguished, decide the sex and age of the individual to give focused on publicizing. This can likewise be utilized to check whether an individual is available before a TV on, and if not, put the unit in backup mode or decrease the iridescence to spare vitality. Furthermore, face identification is the initial move towards further developed applications that require facial restriction, for example, facial acknowledgment, outward appearance acknowledgment, the assessment of the age or sex of an individual, face following or the estimation of the heading of view and visual consideration. Face acknowledgment frameworks has gotten generous consideration from specialists in biometrics, design acknowledgment, and PC vision networks. There are earnest requirements for face acknowledgment in numerous commonsense applications, for example, security checking, observation framework and biometrics recognized framework.

III.CHAT BOT

The key for a bot to comprehend the people is its capacity to comprehend the expectations of people and extraction of pertinent data from that aim and obviously applicable activity against that information.NLP (Natural language handling) is the study of separating the aim of content and important data from content. While NLP as an assistance stages helps designer in building up the NLP capacities in as least measure of time as could reasonably be expected, now and again the

engineers end up out of brains to comprehend the essential language of NLP and preparing their NLP as a help stage as well as could be expected.

Every NLP administration has its own corpora of Language and area that it bootstraps with, the corpora offers capacity to models to get language, syntax and phrasings of a specific space and you should pick the most appropriate area when you are conveying the NLP administration.

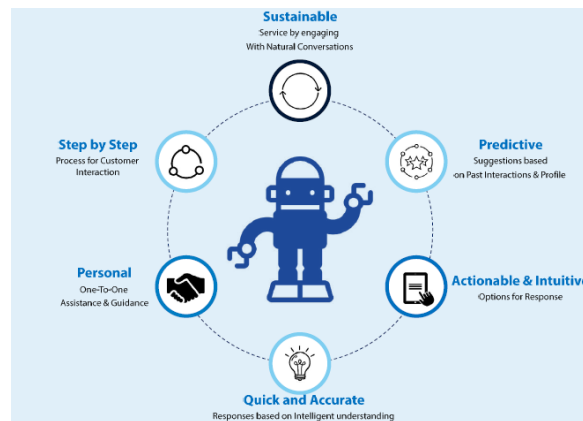


Figure 2: Chatbot complete overview

Intent

Basically, aims are the expectations of the end-client, these goals or aims are passed on by the client to your bot. You can principally place your plans in 2 classifications

1. Easygoing Intents
2. Business Intents

1. Easygoing Intents—I likewise call them 'Casual discussion' Intents. These aims are the opener or closer of a discussion. The Greetings like "hey", "hi", "Hola", "Ciao" or "bye" are the opening or shutting proclamations in a discussion. These purposes should guide your bot to react with a casual chitchat answer like "Hi what would i be able to accomplish for you today" or "Bye a debt of gratitude is in order for conversing with me".

The easygoing goals likewise involve Affirmative and Negative plans for articulations like "alright", "yes please", "No not this one but rather the first", "Probably not".

Having General agreed and negative aims assist you with taking care of every single such goal and rather take them in setting with the discussion bot simply had with the customer.

For ex—if the Bot just posed an inquiry to end-client—you ought to anticipate either a positive or a negative purpose and if its whatever else Bot can pose a similar inquiry once more. Your confirmed and negative aims ought to have the option to deal with most such expressions.

2. Business Intents—These are the aims that straightforwardly guide to business of the bot. For eg—on the off chance that it's a Movie data Bot, at that point an articulation from customer like "When was Schindler's rundown discharged?" is a business goal that means to discover the Release year of Schindler's rundown and you should mark it as needs be with a reasonable name like "GetReleaseYearByTitle".

In a perfect world you should ponder business goals since rest of casual banter like stating welcomes or confirming decisions is taken consideration by general easygoing plans.

III.LITERATURE SURVEY

Real-time AdaBoost cascade face tracker based on likelihood map and optical flow

Andreas Ranftl, Fernando, The creators present a novel face following utilizing changed Viola–Jones recognition calculation. Existing Viola–Jones discovery calculation is static, as data from past edges isn't considered and applicant windows need to pass all phases of the characterization course, else they are disposed of as containing no face. While the proposed Viola–Jones calculation face tracker jelly data about the quantity of order stages passed by every

window, which is utilized to assemble a probability map, which speaks to the likelihood of having a face situated at that position. In contrast with the first Viola–Jones calculation, this changed face tracker needs more calculation time.

Face Description with Local Binary Patterns: Application to Face Recognition

Timo Ahonen, Abdenour Hadid, and Matti Pietikainen, IEEE transactions on pattern analysis and machine intelligence, vol. 28, no. 12, December 2006

Right now proposed a novel and proficient facial picture portrayal dependent on neighborhood double example (LBP) surface highlights. The face picture is isolated into a few districts from which the LBP highlight disseminations are extricated and linked into an upgraded include vector to be utilized as a face descriptor. The exhibition of the proposed strategy is surveyed in the face acknowledgment issue under various difficulties. Right now isn't considered for isolating the facial picture into nearby areas and finding the loads for these districts, which can acquire more exactness identification.

Enhanced Human Face Recognition Using LBPH Descriptor, Multi-KNN, and Back-Propagation Neural Network

Mohannad a. Abuzneid, Ausif mahmood, IEEE Access April 2018

Right now, creator mean to improve the exactness of location continuously applications. The intricacy of the human face and the progressions because of various impacts make it all the more testing to configuration just as execute an amazing computational framework for human face acknowledgment. An upgraded way to deal with improve human face acknowledgment utilizing a back-engendering neural system (BPNN) and highlights extraction dependent on the relationship between's the preparation pictures. Another set called the T-Dataset from the first preparing informational index is gathered, which is utilized to prepare the BPNN. T-Dataset s produced utilizing the connection between's the preparation pictures without utilizing a typical strategy of picture thickness. The corresponded T-Dataset gives a high qualification layer between the preparation pictures, which encourages the BPNN to join quicker and accomplish better precision. Neighborhood parallel example histogram descriptor is utilized. Creator applied five separation estimation calculations and afterward joined them to acquire the T-Dataset, which we took care of into the BPNN. They accomplished higher face acknowledgment precision with less computational expense contrasted and the present methodology by utilizing diminished picture highlights. Be that as it may, the dataset assortment process required additional time than traditional one.

IV.PROBLEM STATEMENT

College admission is a time taking process and managing with manual records and papers are very high. To make this process easy and effective, a real time application with Human computer interaction is needed. Facial detection and recognition is given more importance by researchers, as its applications in real world are increasing. These applications are evolving with exploiting Machine learning concepts through an efficient learning process. Computer and human interaction applications are gaining importance, out of which face recognition and voice recognition plays an important roles. Face recognitions, where machine distinguishes human face, shape and size of faces captured from web camera or pictures. This is by all accounts simple for human, while for machine it is incredibly troublesome. But this is achievable by computers with the aid of highly evolving machine learning techniques.

V.PROPOSED SYSTEM

Face recognition and chatbot is proposed in a real time web application for college admission. For face detection module, LBP (Local Binary Pattern) Histogram Face recognition is used and HaarCascade Classifier is used for face recognition. This application also embedded with Chabot can attend queries at any time of the day. Thus, the Student doesn't have to wait for the someone to help them. AI-based chat bots are capable of learning from interactions and updating themselves on their own. This is a big benefit when it comes to investing time in admission. Accuracy will be more while we learn from the exact information from the machine

VI.IMPLEMENTATION METHODOLOGY

This chapter gives overview of proposed system, its architecture design, modules, dataset collection for implementation, algorithm used and UML designs.

Modules

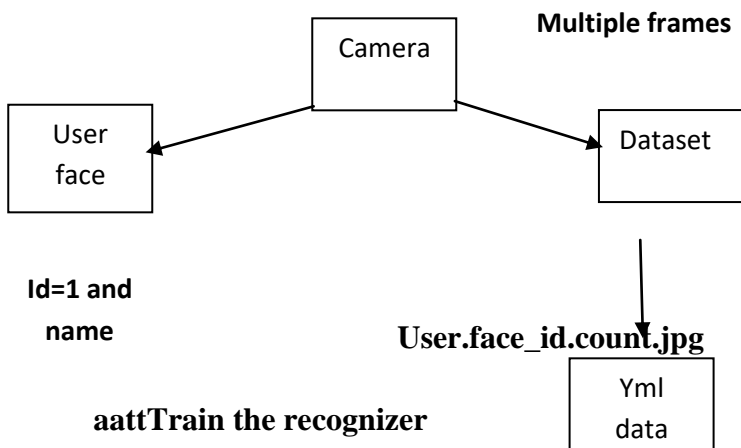
To develop a complete real time project on Face Recognition, the work is divided into four phases:

- ❖ Face Detection and Data Gathering
- ❖ Train the Recognizer
- ❖ Face Recognizer algorithm
- ❖ Chatbot module

Face detection and data Gathering

The most basic task on Face Recognition is of course, “Face Detecting” for training the system. In this module, using webcam “capture” a face in order to recognize it, when compared with a new face captured on future. The most common way to detect a face, is using the “Haar Cascade classifier”. Face Detection using Haar feature-based cascade classifiers is an effective object detection method proposed by Paul Viola and Michael Jones. It is a machine learning based approach where a cascade function is trained from a lot of positive and negative images. It is then used to detect objects in other images.

Initially, the algorithm needs a lot of positive images (images of faces) and negative images (images without faces) to train the classifier. Then we need to extract features from it. The good news is that OpenCV comes with a trainer as well as a detector. During the face detection and training process, OpenCV creates yml file and dataset of frames of captured images are stored.



The second module is about train the recognizer. The collected dataset in the previous module is given as input to this module, where OpenCV recognizer is used and it creates trainer.yml file as output. Local Binary Pattern Histogram LBPH recognizer is used from OpenCV.

LBPH Face Recognition Algorithm

Given a face in a dataset, the first step of the algorithm is to divide the face into 7 x 7 equally sized cells:



Then for each of these cells, we compute a Local Binary Pattern histogram. By definition, a histogram throws away all spatial information regarding how the patterns are oriented next to each other. However, by computing a histogram for each of the cells, we actually are able to encode a level of spatial information such as the eyes, nose, mouth, etc., that we would otherwise not have. This spatial encoding also allows us to weigh the resulting histograms from each of the cells differently, giving more discriminative power to more distinguishing features of the face.

Face Recognizer Algorithm:

When the dataset are gathered and feature extraction is taken in place. Using the face recognizer algorithm face data can be trained and stored under each label so that on encountering the same data on application the respective label will be pulled.

This module recognizes the face. The input of the module is to capture a fresh face on our camera and if this person had his face captured and trained before, the recognizer will make a prediction returning its id and an index. OpenCV recognizer function is used for this recognition.

CHATBOT MODULE

Dataset Details

The chatbot combines a number of cognitive techniques to help you build and train a bot - defining intents and entities and crafting dialog to simulate conversation. The system can then be further refined with supplementary technologies to make the system more human-like or to give it a higher chance of returning the right answer. This assistant allows you to deploy a range of bots via many channels, from simple, narrowly focused bots to much more sophisticated, full-blown virtual agents across mobile devices, messaging platforms like Slack, or even through a physical robot.

TRAINING MODEL

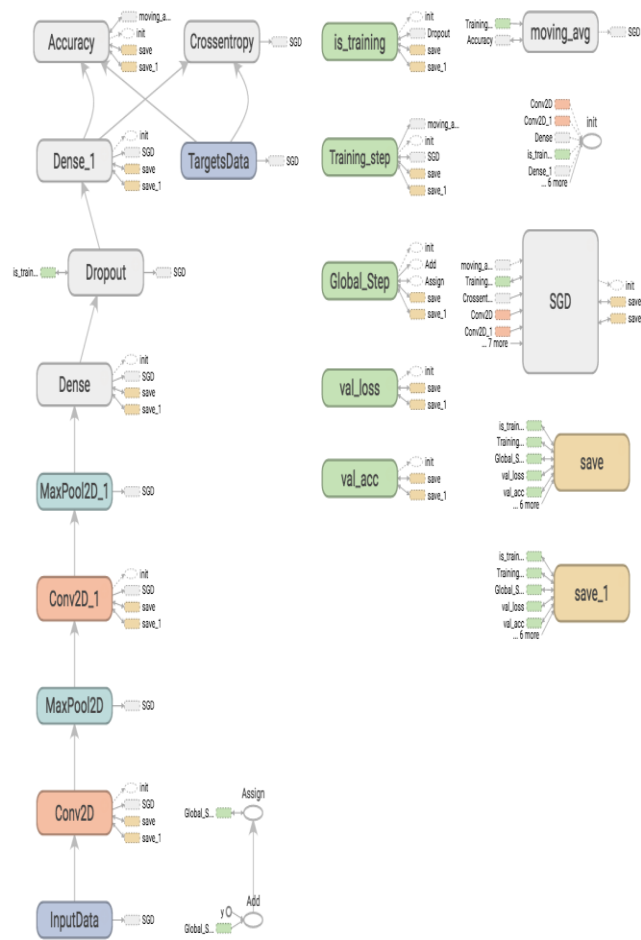
The tensor flow Neural network model is used for training the dataset and testing the dataset.

Input data

This layer is used for inputting (aka. feeding) data to a network. A TensorFlow placeholder will be used if it is supplied, otherwise a new placeholder will be created with the given shape. Either a shape or placeholder must be provided, otherwise an exception will be raised. shape: list of int. An array or tuple representing input data shape. It is required if no placeholder is provided. First element should be 'None' (representing batch size), if not provided, it will be added automatically.

Deep Neural Network Model

Training functions are another core feature of TFLearn. In Tensorflow, there are no pre-built API to train a network, so TFLearn integrates a set of functions that can easily handle any neural network training, whatever the number of inputs, outputs and optimizers. While using TFLearn layers, many parameters are already self managed, so it is very easy to train a model, using DNN model class:



PREDICTING MODEL

The recognized text input from above model is given input for recognition or prediction model. Data pre-processing is done, then the input is compared with the trained feature model from training model. Again DNN model from Tensor flow used for recognition. The output text is given to user.

VII.RESULTS AND DISCUSSION, PERFORMANCE ANALYSIS

These days, PC vision is the inclining field, which incorporates significant ongoing applications including participation checking utilizing face location, object identification, traffic support, security reconnaissance, clinical imaging, and so forth. School confirmation requires some serious energy and labor exertion expending process for all colleges, universities, schools, to beat this issue, we need a proficient framework to make it naturally with no labor utilization and time utilization. Thinking about this, we proposed AI based face acknowledgment for understudy confirmation and Chat bot for understudy inquiries. In proposed work, LBPH and Haar Cascade Classifier are utilized for face acknowledgment and neural system for visit bot is utilized. In our proposed work, administrator can prepare all the accessible understudies and talk bot and keep up their database.

VIII.CONCLUSIONS

College affirmation is taken as our ongoing investigation and utilized man-made consciousness to explain the time and man exertion issue. In the proposed application, we incorporated face identification and chatbot. Face location is as of now an exceptionally dynamic zone of research. Late years have demonstrated extraordinary advances in calculations

managing complex situations. The qualities of Haar utilized in the exertion by Viola and Jones are extremely basic and successful for the location frontal of the face, yet they are less perfect for arbitrary appearances. It is intriguing, to see face identification procedures progressively utilized in genuine applications. In visit bot, we utilized profound learning model neural system calculation to prepare the dataset. This application permits man-machine to communicate, to permit an increasingly characteristic collaboration between a human and a PC, and so forth.

IX.FUTURE ENHANCEMENT

The most immediate heading to come is to additionally improve the calculations and learning highlights. Four fundamental bearings must be tended to: In an initial step, the reconciliation of a progressively solid face indicator which adapts to a few issues appeared by the Haar locators must be considered. In a subsequent advance, to test with more ML calculations for finishing up which strategies plays out the best arrangement results. In a third means, to test with group learning for improving acknowledgment precision. At last, in a fourth means, to actualize the ML strategies in OpenCV, for compacting the present face identification and acknowledgment framework. In future, the profound learning strategies can be considered.

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