Human emotion and hand gesture recognition

Introduction:

We are living in the era of AI. Where everything is done by Artificial Intelligence, robots are taking the world. In this age our project is aimed to give a new, smart mini robot companion. Following this vision our project is to build a system for the robot who can detect human face, emotion and understand the hand gesture. So that it could be a better companion for people of every age. This project focuses the Deep learning algorithms, from the massive collection of data it will train the bot and perform it tasks.

Objectives:

The main objectives are,

- Built a perfect program for the robot to recognize, interacts and follow the orders accurately.
- Use of CNN, transfer learning, vgg16/vgg19, Keras also some libraries like deepface, numpy to train and analyze data accurately.
- Create an optimized and easy to use program to implant in a robot also to use that easily.

Methodology:

- Collect data of people of every age, gender and emotions.
- Data arranging and training
- Model building and observation
- Inserting the best algorithms and libraries
- Running API simultaneously
- Implementing the program in bot
- Deploying product
- Model Monitoring

Mertis:

- High accuracy: The collected data are from online data sources and real life collected data. It will be trained so accurately that there are very few chances to terminate the program.

- Amusement: As mentioned before, it is a companion robot. Will interact with humans so friendly by recognizing accurately as it was trained.
- Learner: It learns from its user so that it could be more personalized and easier to use.

Demerits:

- There are some limitations of this project,
- Data collection: For the project we need a massive dataset. And for the accuracy every regional data is also needed.
- Technological binding: To train the dataset we need high configuration setup.
- Power inefficiency: to run the program the micro processor will consume too much power
- Ambiguity: There are different regions, color, culture and face structures in the world, every regional data collection is time consuming. It may affect the output of program.
- Dumb: It can't talk and can't here to its users.

Special feature:

At the last levels or deploying the robots we will built an web interface so that users can easily access the advantage of project and use it. It also learns from its users and can act like users will.

Conclusion:

By using computer vision, we will be able to perfectly built the program with high accuracy. For its compatibility and friendly behavior, it could be the best mental health assessment and great learning companion for everyone. At last, we'll be able to achieve to mass acceptance from the consumers.