

Capstone Project Submission

Instructions:

- i) Please fill in all the required information.
- ii) Avoid grammatical errors.

Team Member's Name, Email and Contribution:

1) **Mohd Danish:**

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3) **Steps involved:**

- Selecting the dataset
- Basic visualization to see different images of different emotions
- **Model:** CNN Algorithm
- Data Preprocessing
- Data Validation
- Web application(testing on webcam)
- Deployment on Streamlit and Heroku

Please paste the GitHub Repo link.

Github Link:- [Mdanish2020/Face_Emotion_Recognition \(github.com\)](https://github.com/Mdanish2020/Face_Emotion_Recognition)

Streamlit:-

https://share.streamlit.io/mdanish2020/face_emotion_recognition/main/app.py

Heroku:- dashboard.heroku.com/apps/professor-fer-2013

Please write a short summary of your Capstone project and its components. Describe the problem statement, your approaches and your conclusions. (200-400 words)

As a first step, I took dataset from the Kaggle competition, which included images classified into seven different categories of face expression and contained almost 35000 images.

Then I started training with a CNN Model, which gave us training and testing accurately 78.29% and 66.14% respectively.

If we can expand our training dataset, there would be very high improvement in this figure even more.

I saved my CNN model as .h5 file, which is an HDF format that can hold multi-dimensional arrays. Following that, I tested my application on a local camera, for which I created app.py, requirements.txt, procfile and some other files used in both deployment and testing my model. Next I created my web application using streamlit.

My web app was then created on streamlit and deployed to the website using streamlit-webrtc, which allows us to access the web app on the website, which is a

real-time video on the network. I created a streamlit web app and then deployed it to Heroku, an easy-to-use cloud platform for deploying web apps.

Conclusion:

- 1) Our model is giving an accuracy of 78.29% and is robust in that it works well even in a dim light environment.
- 2) The application is able to detect face location and predict the right expression while checking it on a local webcam.
- 3) Finally we believe that through this model teachers can understand the students' perception during online classes and change the way of teaching if needed by understanding the students' motive.