Capstone Project Submission

Team Member's Name, Email and Contribution:
1. **Name** ➡ Arbaaz Malik **Email** ➡ malikarbaaz267@gmail.com **Role :** • Selecting the dataset • Basic visualization to see different images of different expressions • **Model :** CNN Algorithm • Data Preprocessing • Model Validation • Web application (testing on local webcam) • Deployment on Streamlit and Heroku 2. **Name** ➡ Huzaifa Khan **Email** ➡ huzaifakhan2974@gmail.com **Role :** • Selecting the dataset • Basic visualization to see different images of different expressions • **Model :** Custom CNN • Data Preprocessing • Model Validation • Web application (testing on local webcam) • Deployment on Streamlit and Heroku
Please paste the GitHub Repo link.
Github Link:- https://github.com/Malikarbaaz/Face_Emotion_Recognition
Please write a short summary of your Capstone project and its components. Describe the problem statement, your approaches and your conclusions. (200-400 words)

To begin with, we took a dataset from the Kaggle competition, which included images classified into seven categories and contained almost 35000 images.

The second step we start training with a CNN Model, which gave us an accuracy of approximately 81%.

Note: By training longer and adding more data, we could improve this figure even more.

The file was saved as .h5, which is an HDF format that can hold multidimensional arrays. Following that, we tested our web application on a local camera, for which we created app.py, requirements.txt, and some other files used in both deployment and testing our model. Next, we created our web application using streamlit.

Our 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. We created a streamlit web app and then deployed it to Heroku, an easy-to-use cloud platform for deploying web apps.

Conclusion:
- Our model is giving an accuracy of 81% and is robust in that it works well even in a dim light environment.
- The application is able to detect face location and predict the right expression while checking it on a local webcam.
- 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.