**Team Organization and Project Plan**

**Project Title:** AI-Driven Mental Disorder Detection via Facial Expression Analysis

**Team Members:**

* [**Srishti Dixit**](mailto:sdixit000@citymail.cuny.edu) (EMP ID: 24498540)
* **[Devika Salimkumar](mailto:dsalimk000@citymail.cuny.edu)** [(EMP ID: 24455218)](mailto:dsalimk000@citymail.cuny.edu)
* [**MD Sibbir Hossain**](mailto:mhossai026@citymail.cuny.edu) (EMP ID: 24373724)

**Project Plan:**

**Week 1-2:** Data Preprocessing & Augmentation

* Collect and preprocess the AffectNet dataset and FER2013 dataset, converting images to grayscale, normalizing, and resizing them to a uniform size (224x224).
* Implement Mediapipe Face Detection to extract accurate facial landmarks.
* Begin designing the web application's user interface.

**Week 3:** Face Detection Implementation

* Implement and validate the Mediapipe Face Detection for accurate landmark extraction.
* Finalize the initial design of the web application, ensuring it meets the project requirements.

**Week 4-5:** Baseline Model Training (EfficientNet-B4)

* Train the EfficientNet-B4 model using the preprocessed dataset.
* Perform initial evaluations to assess the model's accuracy and efficiency.
* Start integrating the frontend design with the backend infrastructure to support real-time processing.

**Week 6:** Advanced Feature Extraction (Vision Transformer)

* Implement the Vision Transformer (ViT) model for advanced feature extraction.
* Train the ViT model and compare its performance with the EfficientNet-B4 baseline.
* Continue integrating the frontend and backend systems to ensure seamless communication.

**Week 7:** Hybrid CNN-LSTM Model Development

* Develop and train a hybrid CNN-LSTM model for video-based emotion analysis to capture temporal patterns.
* Refine the user interface to support real-time processing of video data.

**Week 8-9:** Web Application Development

* Develop a web application using React.js, focusing on user-friendly design and functionality.
* Integrate Firebase for backend support, including cloud functions for model inference and Firestore for storing results.
* Also planning to do the front-end application using the Python framework Django.

**Week 10:** Model Optimization & Testing

* Optimize model performance by fine-tuning parameters and reducing computational overhead.
* Perform rigorous testing to ensure the model's accuracy, reliability, and responsiveness.
* Validate the web application's functionality, ensuring it provides real-time feedback and a smooth user experience.

**Week 11:** Deployment & Final Report Submission

* Deploy the optimized model to the Firebase backend, ensuring it is accessible and secure.
* Deploy the web application on Firebase Hosting, making it available for users.
* Compile and submit the final project report, detailing the methodology, results, and future work.