

| Programme<br>B.Tech CSE | Batch  | 2021 - 2025 | Project:    | Multimodal AI Framework for Social Media Based Mental Disorder Detection and Personalized Wellbeing Insights |  |                                 |                  |                     |                  |
|-------------------------|--|-------------|-------------|--|--|---------------------------------|------------------|---------------------|------------------|
|                         | Group  | 29          | Names:      | Soumyadeep Nandy, Prithwish Sarkar, Sagnik Mukhopadhyay, Arkapratim Ghosh                                    |  |                                 |                  |                     |                  |
|                         |  |             |             |  |  | Attendance (Insert below names) |                  |                     |                  |
| Date                    | Project discussions  | Semester    | Deliverable | Issues   | Guide's remark   | Soumyadeep Nandy                | Prithwish Sarkar | Sagnik Mukhopadhyay | Arkapratim Ghosh |
| 3-Jul-2024              | Topic Discussion   | 7           |             |  | Study relevant papers  | Present                         | Present          | Present             | Present          |
| 17-Jul-2024             | Additions to Project Rough Diagram 1                       | 7           |             | Classifying whether text is positive or negative   | Using CNN  | Present                         | Present          | Present             | Present          |
| 29-Jul-2024             | Finalizing Project Rough Diagram 2                         | 7           |             | Data extraction from social media  | Web Scraping and sample code   | Present                         | Present          | Present             | Present          |
| 24-Aug-2024             | Synopsis Discussion  | 7           |             |  | Make the required changes  | Present                         | Present          | Present             | Present          |
| 09-Sep-2024             | Dataset and it's content                                   | 7           |             | Extensive Dataset Required (Reddit + Twitter)  | Using Reddit API and Kaggle datasets   | Present                         | Present          | Present             | Present          |
| 28-Sep-2024             | Mid-term Deliverables                                      | 7           |             | What to include in the project report  | Using Latex all sections should be filled and analysis results till date should be inserted      | Present                         | Present          | Present             | Present          |
| 25-Oct-2024             | Project Presentation and Prototype                         | 7           |             | What changes need to be made in PPT and Final Deployment   | Seperate data collection for each class, XGBoost, improve interface                              | Present                         | Present          | Present             | Present          |
| 14-Nov-2024             | Modified Prototype Presentation                            | 7           |             | Can audio mood be analyzed for videos with no speech or text   | Define a set of parameters for mapping mental issue to mental wellbeing                          | Present                         | Present          | Present             | Present          |
| 15-Dec-2024             | Additions made to the existing project after previous meet | 7           |             |  | Provide a brief writeup of all the added features and what all can be added in the next semester | Present                         | Present          | Present             | Present          |
| 13-Jan-2025             | Review PRD   | 7           |             | ML Model workflow diagram  | Give diagrams for the workflow of the web application instead of code                            | Present                         | Present          | Present             | Present          |
| 16-Jan-2025             | Prototype demo and PRD review                              | 7           |             |  | Make the required changes  | Present                         | Present          | Present             | Present          |
| 29-Jan-2025             | Next steps for the project                                 | 8           |             |  | Add features and reduce PRD  | Present                         | Present          | Present             | Present          |
| 15-Mar-2025             | Review of Mid Term Deliverables for Semester 8             | 8           |             |  | OK   | Present                         | Present          | Present             | Present          |
| 17-Mar-2025             | Full demo of the system                                    | 8           |             |  | OK   | Present                         | Present          | Present             | Present          |
| Overall                 |  |             |             |  |  | 100%                            | 100%             | 100%                | 100%             |

Guide's signature:

| Area                                     | Question  | Raised By      | Status (Open / Closed) | Response   | Response By    |
|--|---|----------------|------------------------|--|----------------|
| Topic Discussion                         | What classification model should be used for text?                                      | Team           | Closed                 | Using various algorithms like Naive Bayes, Random forest for a comparative study   | Project Mentor |
| Additions to Rough Diagram 1             | What features should we extract from text data?   | Team           | Closed                 | Plan to use sentiment, keywords, and emotions. TF-IDF will be Helpful  | Project Mentor |
| Rough Diagram 2 Finalization             | What tools will be used for web scraping?   | Team           | Closed                 | Using Reddit API and sample Web scraping code  | Project Mentor |
| Synopsis Discussion                      | How detailed should the project synopsis be?  | Team           | Closed                 | Synopsis should include a short Project overview   | Project Mentor |
| Mid-term Deliverables                    | What format should the report follow?   | Team           | Closed                 | Use LaTeX and include all Analysis and results   | Project Mentor |
| Presentation and Prototype               | What changes need to be made in PPT?  | Team           | Closed                 | Implement different input types, Improve interface   | Project Mentor |
| Video Analysis                           | Can audio be mood be analyzed if there is no speech or text in the video ?              | Project Mentor | Closed                 | Using Frequency Analysis for preliminary classification. Using librosa module and MFCC                                       | Team           |
| Mapping mental issue to Mental wellbeing | Are there specific parameters for mapping mental issue to Mental wellbeing ?            | Project Mentor | Closed                 | Changing the prompt for using Gemini API by adding Ryff's Scale of Psychological Wellbeing                                   | Team           |
| Detect facial emotions                   | How to detect facial expressions ?  | Team           | Closed                 | Using Deepface module of Python  | Team           |
| Image Description                        | Can situation depicted by an image be described ?                                       | Team           | Closed                 | Using Transformers (vit-gpt2 model)  | Team           |
| Model Retraining                         | Is only a single dataset considered the mother dataset all throughout the application ? | Project Mentor | Closed                 | No, model retraining is allowed if the user selects the option to analyze and retrain the model using the input              | Team           |
| Video Posts                              | Are videos from social media posts used ?   | Project Mentor | Closed                 | Yes, video from twitter is extracted. Video and audio from reddit posts are extracted and combined to display in the website | Team           |
| Visualization                            | Does a user get plain text result ?   | Project Mentor | Closed                 | Graphs for emotion analysis, individual posts, overall probabilities for each class after mental issue classification added  | Team           |

|                              |  |                |        |  |      |
|------------------------------|--|----------------|--------|--|------|
| Model Usage                  | Does the website implements single or multiple model ?                                 | Project Mentor | Closed | Multiple models are used to create ensemble model and implemented in the website   | Team |
| Dataset Size and Scalability | What observations were made regarding varying dataset size while model creation ?      | Project Mentor | Closed | Accuracy varies. To keep the accuracy within acceptable variations, explored distributed architecture through sequential steps to show how bigger datasets can be divided into subsets, create models for those subsets, create ensemble model for each subset and finally combine them to have one final ensemble model | Team |
| Parameterized Association    | How to associate between the mental wellbeing parameters and the issue probabilities ? | Project Mentor | Closed | Use Ryff Scale question set or any other parameters to associate with the issue parameters, create a heat map, get the cell with the highest value. With respect to the row and column value for the selected cell improve the gemini prompt   | Team |
| PDF Analysis                 | Analyse typed or handwritten pdf text  | Project Mentor | Closed | User uploads a typed or handwritten pdf. Extract text from there and analyse it  | Team |
| Dynamic Input                | Describing a auto generated image  | Project Mentor | Closed | A random image is shown to the user, user describes it, the description is used for the mental issue prediction  | Team |

|            |                                 |                |        |   |      |
|------------|---------------------------------|----------------|--------|---|------|
| Update PRD | Codes and final semester format | Project Mentor | Closed | Replacing codes with all in one /<br>reduced number of algorithms | Team |
|------------|---------------------------------|----------------|--------|---|------|