PROJECT PROGRESS DOCUMENTATION

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INTRODUCTION

"Analyzing and Visualizing Sentiments in CMU Faculty Evaluation System Comments" addresses the need for a more efficient method of processing student feedback at Central Mindanao University (CMU). Currently, the faculty evaluation system relies on manual categorization of student comments, which is time-consuming and susceptible to bias. With this, the project aims to develop a web-based application that utilizes sentiment analysis to automatically categorize student comments into interpreted positive, neutral, or negative sentiments. By integrating Natural Language Processing (NLP) techniques, the system will analyze the text of the comments and provide visualizations to represent the overall sentiment trends. These visualizations will assist administrators and faculty members in quickly understanding the general feedback, identifying areas for improvement, and recognizing strengths.

The documentation will provide a detailed overview of the project's development, including the updated project plan, a comparison of planned versus actual progress, and evidence of the prototype presented during the proposal defense. Additionally, it will include feedback from the defense, a reflection on the learnings throughout the semester, and instructor comments or suggestions for the project. This comprehensive documentation aims to ensure transparency and continuous improvement in the project's implementation and outcomes.

PROJECT PLAN UPDATES

A. OVERVIEW OF MIDTERM PROJECT PLAN

For the midterm submission, we presented the progress reports that we had accomplished, this is mainly composed of the Gannt chart presentation as well as the actual progress and the problems and actions that we have taken in the reports.

For the Gannt charts, we had some adjustments along the way, the initial project plan involved several key activities: setting up the development environment, acquiring the dataset, manually annotating comments, and preprocessing data to remove duplicates, special characters, and stop words. Additionally, progress reports detail weekly tasks, such as environment setup and dataset acquisition in week one, data preprocessing and annotation in week two, model architecture design and prototype creation in week three, and database design and frontend development for the faculty and admin interfaces in week four. Manual annotation required establishing ground rules to ensure accuracy, which was initially a challenge but later resolved through consultation with relevant studies. The project faced issues such as delays in accessing the CMU database, leading to the design of an alternative database, and the high cost of API and model training. The final prototypes included interfaces for both faculty and admin sides to visualize sentiment analysis results. The documentation provides a comprehensive overview of the project's progress, problems encountered, and solutions implemented, ensuring a clear understanding of the project's development and outcomes.

B. UPDATED PROJECT PLAN

There have been no changes to our project plan prior to our capstone project proposal. The project plan that we have been following is the one that was created during the midterms. The figure below shows the project plan of the project.

PROJECT GANTT CHART

PROJECT TITLE	SENTIMENT ANALYSIS OF CMU FACULTY EVALUATION SYSTEM FEEDBACK
PROJECT MANAGER	Pamisa, Arram T.
MEMBERS	Mengote, Jianne Merijo E.
	Naquinez, Ritchel M.

WBS NUMBER	TASK TITLE	START DATE	DUE DATE	DURATION (WEEK)	PCT OF TASK COMPLETE	FEBRUARY				MARCH				APRIL				MAY			
						1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
1	Phase 1: Model Building																				
1.1	Setup Environment	2/11/24	2/17/24	1	100%																
1.2	Dataset Acquisition	2/11/24	2/17/24	1	100%																
1.3	Data Preprocessing	2/13/24	2/19/24	1	100%																
1.4	Data Annotation	2/25/24	4/6/24	6	50%																
1.4.1	Set Ground Rules	2/25/24	3/9/24	2	100%																
1.4.2	Annotate Comments	3/10/24	3/30/24	3	25%																
1.4.3	Validate Annotated Comments	3/31/24	4/6/24	1	0%																
1.5	Train Model/Fine-Tune	4/7/24	4/27/24	3	0%																
1.5.1	Analyze Model	4/14/24	4/27/24	2	0%																
1.5.2	Improve Model	4/14/24	4/27/24	2	0%																

2	**Phase 2 : Design Development Phase**				
2.1	Define Conceptual Diagram	2/21/24	2/28/24	1	100%
2.2	Develop Model Architictural Design	2/21/24	2/28/24	1	100%
2.3	Create Detailed Diagrams	2/21/24	3/6/24	2	100%
2.4	Database Design	3/1/24	3/14/24	2	100%
2.5	Schema Design	3/1/24	3/8/24	1	100%
2.6	Normalization	3/8/24	3/15/24	1	100%
3	**Phase 3 : Front-end**				
3.1	Prototype Design	2/21/24	2/29/24	2	100%
3.2	Front-end Development	3/1/24	4/6/24	5	72%
3.2.1	Faculty Side	3/1/24	4/14/24	2	70%
3.2.2	Admin Side	3/15/24	4/6/24	3	73%
4	**Phase 4: Back-end**				
4.1	Model and Database Integration	5/5/24	5/11/24	1	0%
4.2	Faculty Side	5/12/24	5/18/24	1	0%
4.3	Admin Side	5/19/24	6/1/24	2	0%
5	**Phase 5: Testing**				
5.1	Alpha Testing	6/2/24	6/8/24	1	0%
5.2	Beta Testing	6/9/24	6/15/24	1	0%
5.3	UAT	6/16/24	6/22/24	1	0%
6	**Phase 6: Deployement**				
6.1	Backend and Model Hosting	6/23/24	6/29/24	1	0%
6.2	Verify Compatability and Accessibility	6/30/24	7/6/24	1	0%
6.3	Enhancements	7/7/24	7/13/24	1	0%

C. COMPARISON OF FINAL PROJECT PLAN AND ACTUAL PROGRESS

Four out of ten tasks were completed in Phase 1 (model building) of the project plan. Specifically, we completed the setup environment, dataset acquisition, data preprocessing, and set ground rules tasks. However, the data annotation task remains incomplete. This delay occurred because we were advised to seek experts for the data annotation process. As a result, subsequent tasks, such as fine-tuning the model, have been affected, as they require a fully annotated dataset.

Moving to the next phase, all tasks in Phase 2 were completed within their specified time frame. These tasks include creating conceptual diagrams, model architectural design, system diagrams, and database schema design. Then in Phase 3 (front-end development), the prototype design task was completed on the specified time frame. While the subsequent tasks were not fully completed, significant progress was made. For instance, the faculty-side development is currently 70% complete, while the admin-side development stands at 73% complete, resulting in an overall average completion rate of 72% for the front-end development phase. Thus, comparing our final project plan with the actual progress, while some tasks remain incomplete due to unforeseen challenges, we have made significant progress in key areas, keeping the project largely on track.

CAPSTONE MANUSCRIPT

PROTOTYPE PRESENTATION

A. PROTOTYPE EVIDENCE

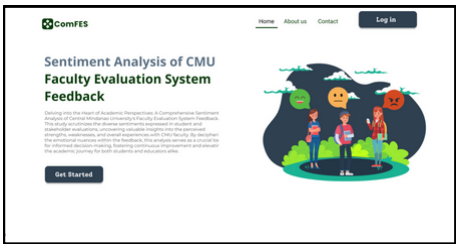
The prototype presented during the proposal defense is a system for analyzing and visualizing sentiments from comments in the Central Mindanao University (CMU) Faculty Evaluation System (FES). It features tailored dashboards and functionalities for administrators, supervisors, and faculty members.
The landing page of the system includes sections for Home, About Us, and a Login button, where users log in using their institutional email and password. Administrators can visualize overall faculty ratings and statistics through a dashboard that updates automatically with new sentiment data. They can initiate sentiment analysis, publish results for faculty members, and access past sentiment records. Additionally, administrators can filter comments by faculty, semester, or sentiment type (positive, negative, or neutral) and review historical data to track trends over time.

Supervisors have a personalized dashboard showing sentiment analysis results related to their performance and an overview of their college's sentiment results. They can access and filter student comments by sentiment and view detailed teaching performance metrics, such as subjects taught and student feedback counts. Supervisors also have a profile section to manage their personal information.

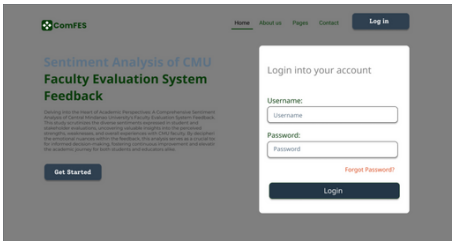
Faculty members can see key information on their dashboard, including the number of classes, students, comments, and sentiment analysis results, with a graphical summary of feedback each semester. Their profile section displays personal and educational details, allowing updates to their information and photos. The comments section lets faculty filter student feedback by semester and view a breakdown of positive, negative, and neutral comments, with detailed information available in a history section.

Overall, the system enables each user group to effectively manage and utilize sentiment analysis results to enhance their performance and gain insights within the university.

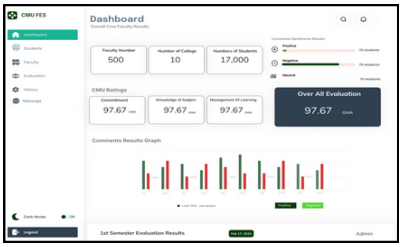
B. PROTOTYPE IMAGE



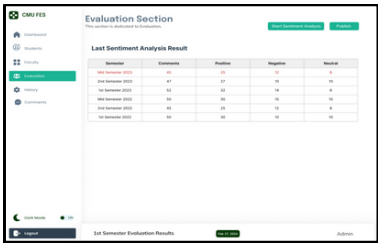
LANDING PAGE



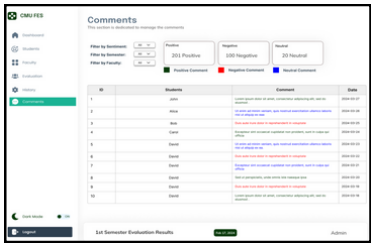
LOGIN MODAL



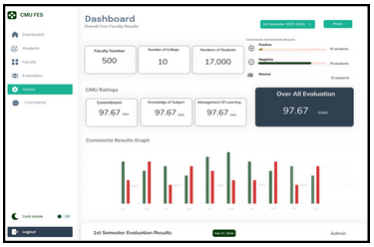
ADMIN DASHBOARD



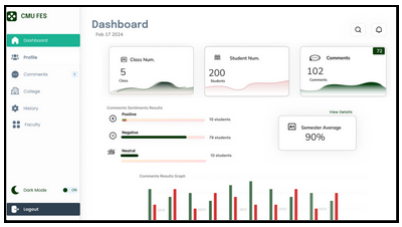
EVALUATION SECTION



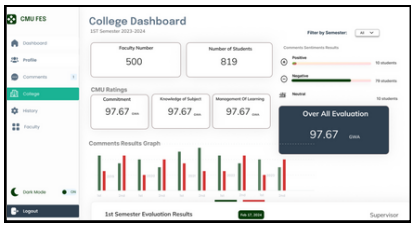
COMMENTS SECTION



HISTORY SECTION



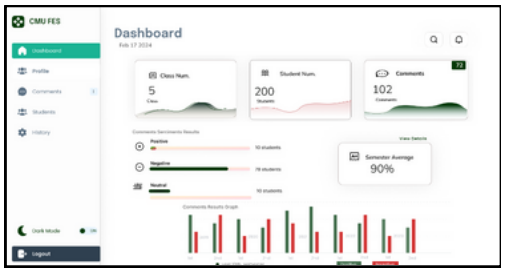
SUPERVISOR DASHBOARD PAGE



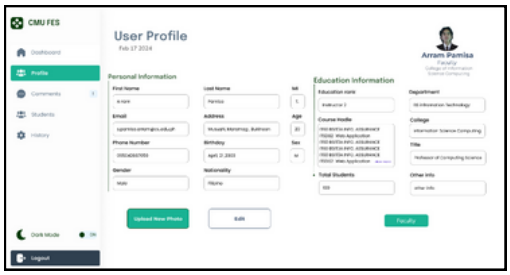
COLLEGE DASHBOARD

COMMENTS PAGE

VIEW LATEST DETAILS



FACULTY DASHBOARD



FACULTY PROFILE

FACULTY DETAILS SECTION

FACULTY COMMENTS SECTION

PROPOSAL DEFENSE PHOTO DOCUMENTATION

A. PHOTO EVIDENCE

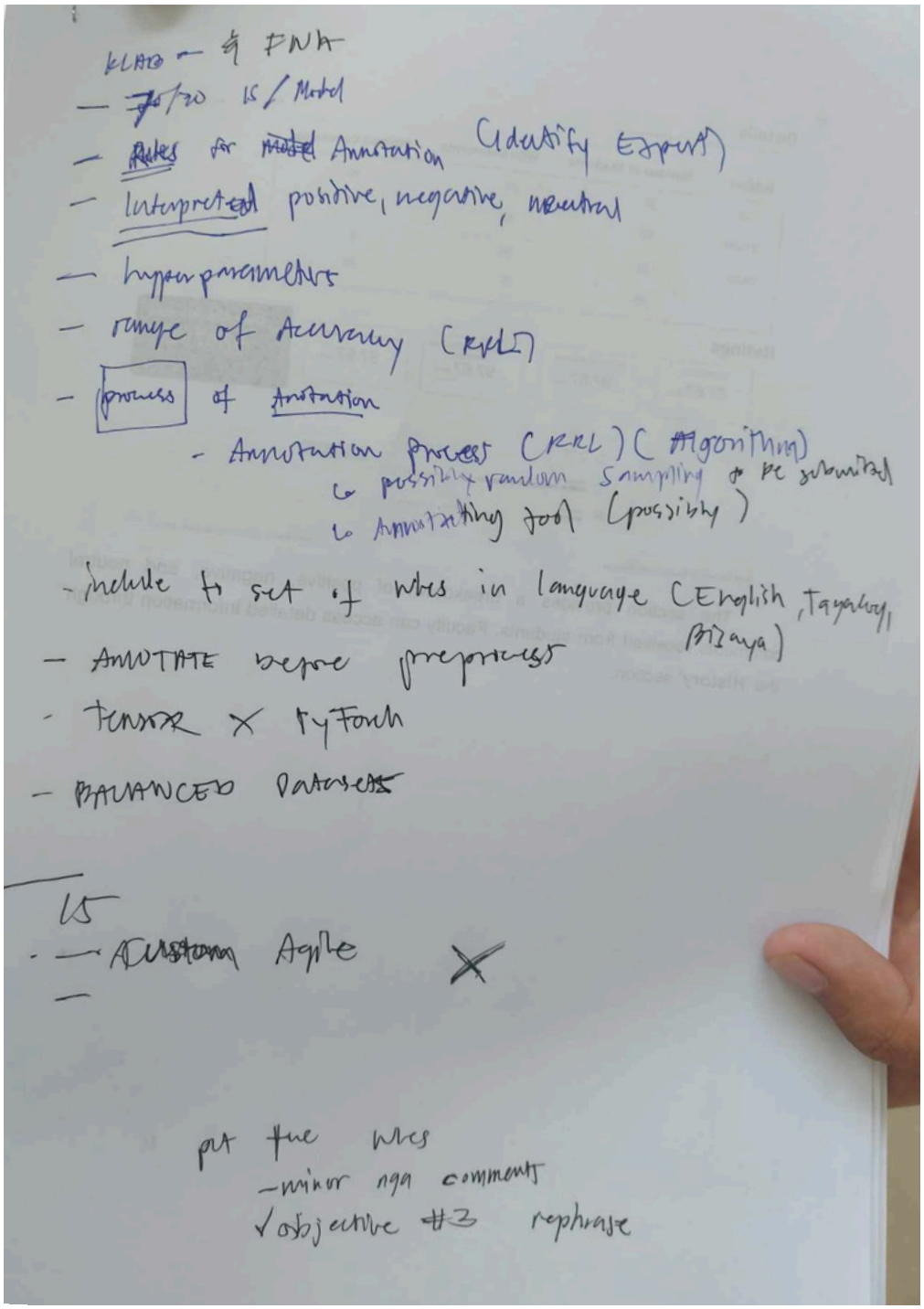
This is the documentation for our proposal defense held on April 26, 2024, we had our Capstone Proposal Defense. It was scheduled for 9:00 AM in the CISC Conference Room. With our adviser, sir Bascones, and our panel advisers Ma'am Aguirre, and Sir Kent we had a meaningful discussion about what we presented in our proposal defense. Our project "Analyzing and Visualizing Sentiments in CMU Faculty Evaluation System Comments" was presented and successfully approved. After presenting our capstone project to the panel committee, the Q&A section followed that would further improve the capstone project. We had some suggestions and comments from our panels and are thankful for the guidance we had from them.

PANELISTS AND ADVISER COMMENTS AND SUGGESTIONS

The panelists and adviser provided several specific comments and suggestions for improving the manuscript. The following are the chapters in the manuscript that need to be revised:

- Chapter 1:
  - Rephrase objective #3
- Chapter 2:
  - Include the ideal range of accuracy.
  - Change the Synthesis of Studies into paragraph format.
- Chapter 4:
  - Change methodology to Custom Agile
  - Sprint 1 (Sentiment Analysis Model Development)
    - Specify the Data Acquisition Task
    - Ground Rules for Annotating the Dataset
    - Balanced Dataset
    - Include to set rules in language (English, Tagalog, Bisaya)
    - Model Accuracy Baseline
  - Use the terms “Interpreted Negative, Positive, and Neutral” in the UI.
  - Merge Sprint 2 (IS Development) and Sprint 3 (Model Integration)
  - Edit the IS Development Flowchart
  - Unit Testing should be part of the Alpha Testing

A. MANUSCRIPT COMMENTS



LEARNINGS AND COMMENTS FOR INSTRUCTORS

A. PROBLEMS ENCOUNTERED

During the semester, our progress was relatively fast, but we encountered several issues in developing our system. Initially, we changed our capstone project, which required us to start our development from scratch again early in the semester. Then, the most significant problem we encountered was finding an expert to establish the ground rules that would serve as our basis for automating the comments. This issue delayed our development because it is crucial to have these ground rules in place before proceeding with automation. However, we addressed this problem by searching for ground rules from other studies on the internet, using them as temporary guidelines to continue our development. Meanwhile, we also pursued parallel development of our frontend and continued researching relevant studies.

In terms of IS development, we encountered some challenges in making the design more user-friendly because we are utilizing a new framework for our front-end development, React.js. Since this is our first time using this framework, we experienced issues with responsiveness. However, the functionality is working well, and we are now adjusting to the complexity of the framework. To address these challenges, we are continuing with trial and error, filing bugs, searching and utilizing various components to improve the responsiveness of our system.

B. LESSONS LEARNED

Based on those experiences, we learned that we need to embrace changes and seek better solutions. Additionally, in the data science aspect, we learned that we should not underestimate data science because the model is the most important part of our system compared to IS development.

C. INSTRUCTOR FEEDBACK

Our former capstone adviser, Sir Bonifacio, suggested that we consider Sir Bascones' study related to sentiment analysis. Although we achieved significant accomplishments with our previous capstone project, Sir Bascones' research offers advantages and valuable insights compared to our earlier studies. Therefore, we decided to make Sir Bascones our new capstone adviser. Additionally, our HCI instructors had a significant impact on our development. Mrs. Aguire guided and helped us with data science, especially regarding the models, while Mrs. Tabamo assisted us with our project plan and system design. The help of our advisers, including Sir Bonifacio, was crucial for a better understanding and successful completion of our papers.

CONCLUSION

In summary, this documentation offers a comprehensive overview of the project plan from midterms up until the project proposal stage. Initially, it outlines the progress achieved during midterms and then discusses the progress made afterward, including a comparison between the final project plan and the actual progress. Due to unforeseen challenges, some tasks in the project plan were not completed, particularly in the first phase (model development). We faced some challenges during that part, specifically the data annotation part. As a result, subsequent tasks were also affected. Despite these challenges, significant progress was still achieved in Phases 2 and 3.

Additionally, this document includes the capstone project manuscript and the project prototype. The prototype presentation demonstrates our progress with detailed descriptions and accompanying images showcasing the key features. Furthermore, this documentation includes photos from our capstone project proposal, providing evidence of its completion. Feedback from the panel committee, which serves as valuable input for project refinement, is also presented in this documentation.

Moreover, this documentation addresses the challenges encountered during the semester and how they were solved. Finally, we expressed our gratitude to our instructors for their guidance and support. Their insights, particularly from our HCI instructors, have been truly helpful in enhancing the project's outcomes. Hence, with the project proposal completed and a research number secured, we are more motivated than ever to start the project development phase. Hopefully, with the continued support from our instructors and the collaboration of the team, we anticipate overcoming any future challenges and achieving success in bringing the completion of this project.