2019

Smart Health Emotions Tracking System

PROJECT PHASE 1: DESIGN EVALUATION AND REQUIREMENTS ESTABLISHMENT

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COURSE: | CS630: CURRENT TOPICS IN HUMAN COMPUTER INTERACTION

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Abstract:

Stress is feeling of emotional reaction that is caused by the intervention of situations that occur in one's life. It has led to chronic diseases in many individuals unless it is handled appropriately by taking measures and participating in activities regularly. Thus, to avoid this scenario, children in schools are scheduled activities and their emotions need to be recorded over the period to analyze how those activities correlated in their all-round development.
Smart health tracking system for tracking emotions is one such application that records the scheduled activities and records student emotions over the period allowing analysts to analyze student emotions at different times while they register for their activities. The emotions are measured based on the scale of emotions ranged from 0 to 10.

1.Usability goals with respect to Design Goals:

The design goals of the smart health tracking system include the usability of the application to the user as its top priority. Besides usability, below are the key performance indicators of the design.

- The user interface of the system should be easy to learn and use.
- It should provide interactive webpages that are easy to navigate since students are the primary users of the application.
- The enrollment of the activities should be recorded efficiently, and the user should be able to retrieve them in timely manner.
- Emotions of the user should be recorded timely.
- The content on the website should be easily readable and appealing to the user.
- The website functionality should be error free and should follow aesthetic and minimalistic design principles.

User Experience Goals:

The below mentioned are the user experience goals that the application is supposed to attain.

- Since the smart health system tracks the emotions, the observations printed on the history page should be easy to learn and should be appealing to the user.
- User should feel at ease to navigate across the site.
- It should be educative to the user in the way that the health-related benefits of the activity he/she registers should be listed in the enrollment phase.
- To make it more interactive, the user should be able to give feedback to the activity that he completed.
- The website must be colorful to attract the students and should list the perks that the student attains in the form of stars, badges of acclaims to encourage the students for taking up the activities.

- To achieve the usability and user experience goals, below are the questions that might arise in terms of seeing the smart health tracking system in developer's perspective.

2.Developer concerned Questions:

- Will the system be able to track the emotions of the student in time ?

- Yes, the system will track the time at which the activity is added to the systems and the time at which the emotion is captured. The student will be able to note the emotions on daily basis and the history of the user lists the emotions along with their recorded times.

- Will the system be able to archive the history of already completed activities?

- Yes, the system will be able to archive the completed activities in terms of both student perspective and in terms of admin perspective. The closed events and completed activities can be archived by cloning the details with respect to the system time.

- Can the images of emotions be captured?

- This is extensive and is possible in the way that if we choose to setup and utilize Microsoft Azure Face API, we can run the face detection and analysis for emotion analysis.

- Does the system maintain a log of events?

- Yes, we do can have the log of events that lists the times the user logged into the system.

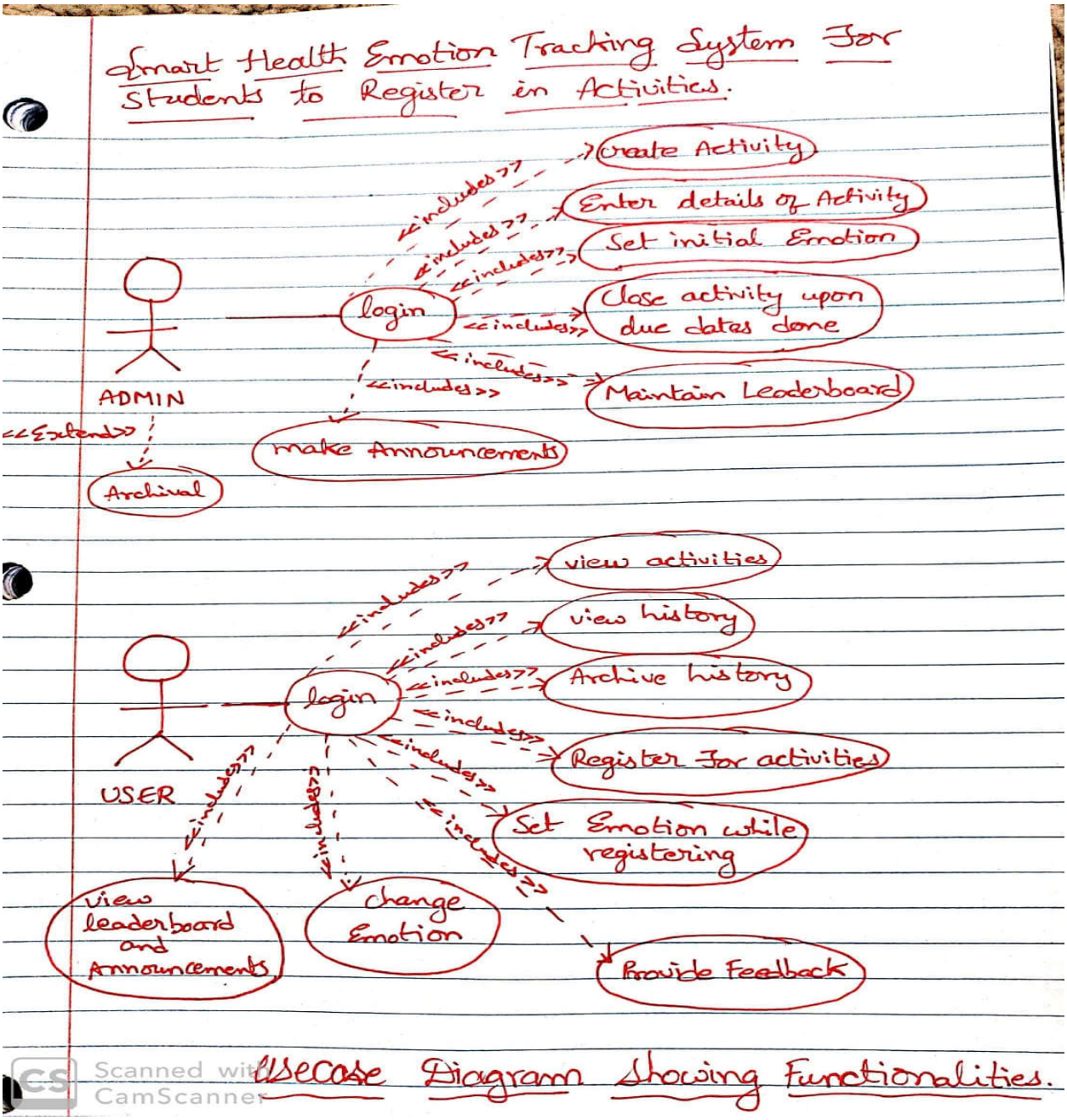
3.Main tasks after critical analysis of user needs and user requirements:

- From critically analyzing the user needs and requirements I could locate two types of users for design of smart health tracking system namely Admin and User who is student.
- The system should have an appealing landing page showing the scale of emotions.
- The Admin should be able to add the activities to the system by providing activity type typically categorized as assignment, quiz, exam, homework, project, club meeting, discussion, paper, tutoring, Games and Sports and social club.
- These activities should have the details of their course name/number/section along with the due dates and time for registration.
- At the same time, the grade weightage for the activity and initial mood should be added to the system. Once the record for an activity is added, the system should store the time of activity incorporation noted.
- Next comes the user role where here the user is student. The student should be able to view the available activities along with the details and once he/she opts for an activity, the

student/user should be asked to log emotion automatically recording the logging time of the emotion.

- If the user wants, he should be able to view the history of his already completed activities and if he wishes so, he should be able to archive the history or delete an activity.

4.Use case diagram for the smart health tracking system:



5.Final requirements represented and listed in the form of Volere Shell are as follows:

Landing page:

Requirement #: 1 **Requirement type #:** 2 **Event/BUC/PUC#4** 1
Description: Have an appealing landing page with scale of emotion
Rationale: To have an aesthetic landing page that attract the student users to view and register for activities while logging their emotions.
Originator: Developer, School authorities
Fit Criterion: The system should be welcoming
Customer satisfaction: 5 **Customer dissatisfaction:** 1
Priority: 1 **Conflicts:** None
Supporting Material: User feeling survey

Admin page:

Requirement #: 2 **Requirement type #: 3** **Event/BUC/PUC#3** 1
Description: Webpage admin should be able to insert the activities on to the system along with its details. Once the activity is added, the time at which the record is entered into the system should be logged. It should also add initial default emotion for the activity.
Rationale: To add the new activities into the system.
Originator: Developer, Activities authority administration
Fit Criterion: The system should accurately log the activities along with the time of activity log.
Customer satisfaction: 5 **Customer dissatisfaction:** 1
Priority: 1 **Conflicts:** None
Supporting Material: Activities authority administration

User page:

Requirement #: 3	**Requirement type #:** 2	**Event/BUC/PUC#2** 1

Description: The user i.e. student here should be able to view the available activities and register him/her into one while recording his emotion. At the same time, when his emotion with respect to the activity changes, he should be able to change the emotion. The emotion recording date and time should be logged into the system and archive when needed.
Rationale: To help students register for activities and log the emotions
Originator: Developer, User and Emotions analyst.
Fit Criterion: The system should let users register, log emotions, view history and archive.
Customer satisfaction: 5 **Customer dissatisfaction:** 1
Priority: 1 **Conflicts:** None
Supporting Material: User requirements survey

6.Conceptual Model for Smart Health Tracking System:

The conceptual model for designing the smart health tracking system is as follows:

- The system is intended to serve the students and aid them in registering for activities.
- This system lets the students view events and register for them. They do get the benefits of the activity listed beside the activity details.
- If the user chooses to register after seeing the details, their emotion is requested for log. Once the student provides his emotion, the system logs the registration along with the time of logging. He then will be able to change the emotion for his registered activity at any time and will be able to view all his activity on that event.
- The student can also view the history of past events and can archive them if he/she wishes so.
- The added functionality of the web page is that it gives the feature of providing feedback on the activity once it is completed so that changes can be made the next time when the activity is offered. This way the application strives for improvisation.
- On the other hand, the authority of adding new activities on to the system is granted only for the admin who lists the activities on the portal providing initial emotions.

7.Mental Model from People:

When analyzed from user perspective, the mental model for the same smart health tracking system lists the below attributes as primary concerns for the user i.e. students to use this system apart from the basic functionalities listed in the conceptual model.

- The students need leaderboard that keeps them motivated. A scrolling leader board showing the highest achievers on the web landing page encourage the students to register for activities and keep them motivated.
- Continuous feedback lets the activities and their scales improved.
- An announcement board can help them keep up to date.
- Inbuilt emotional analysis page where students can track emotions overtime.

Merging both the proposed conceptual and mental model from people,

8.Enhanced Conceptual Model:

After through analysis, below are the final product requirements.

- Landing page with scale of emotions.
- Admin authority privilege to add activities along with storage of date and time of when the activity is registered into the system adding initial emotion.
- A user page where,

  - ✓ Student can login and view available events.
  - ✓ Choose event by reading its details and benefits.
  - ✓ Log his/her emotion on registering to the activity.
  - ✓ Should be able to change emotions overtime
  - ✓ Should be able to retrieve history and archive if needed.

- An announcement board for any changes in the activities.
- Continuous feedback page
- Leader board on main screen to encourage students and keep them motivated.
- Inbuilt emotional analysis page.

9.Interface Design Issues:

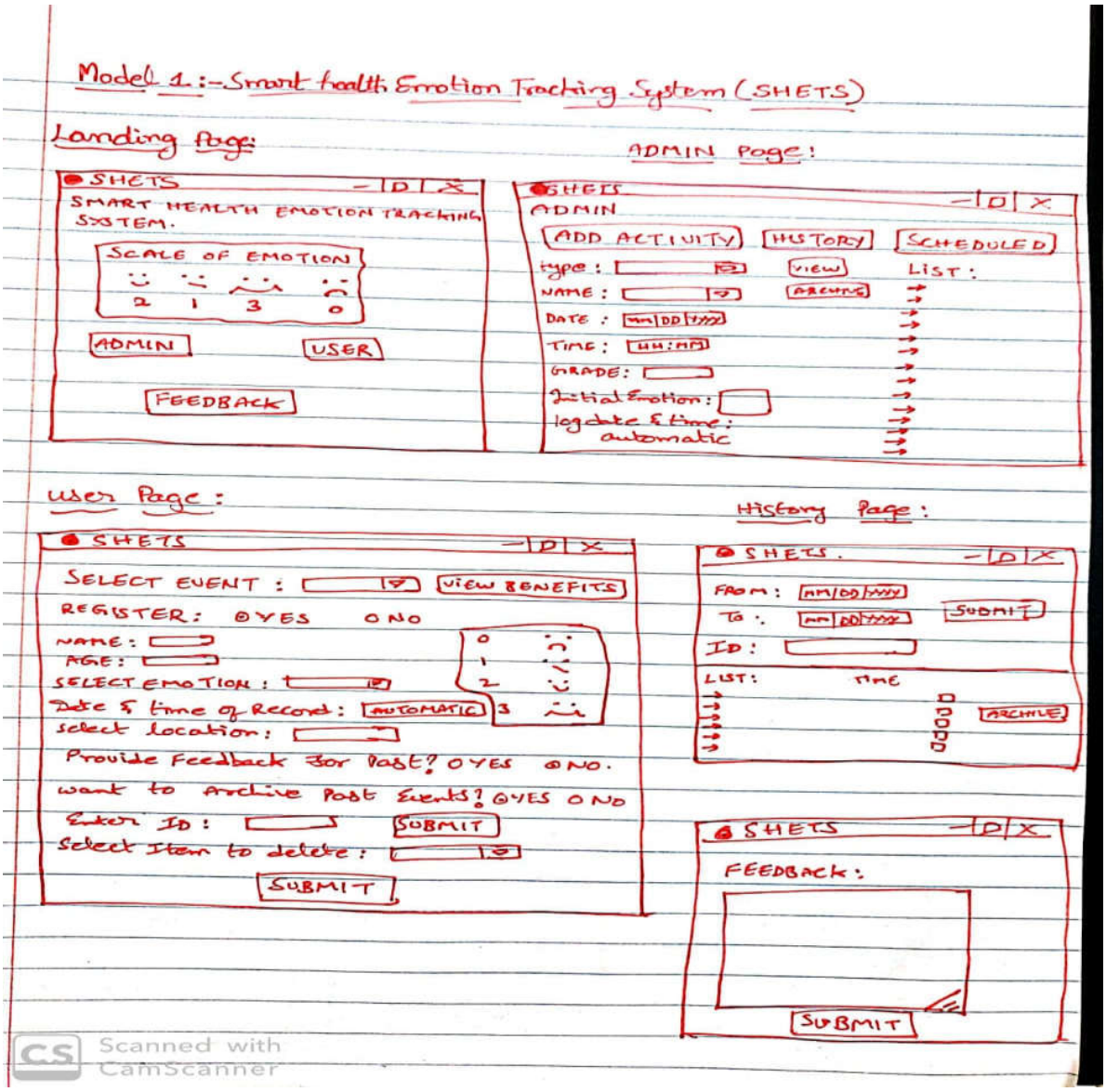
The interface design issues that needs to be given importance are as follows:

- The user's memory load should be controlled to make faster and efficient retrieval of data.
- Interface consistency should be maintained and the listed titles and content on the application interface should be accurate.
- The learnability of the application should be given priority.
- The interface should be ordered and should be menu driven.
- It should be adaptable to all kinds of users namely novice, specialized and sophisticated users.
- The graphs and images must be consistent and clear.
- Visibility and color schemas adopted must be consistent and the display should be organized.

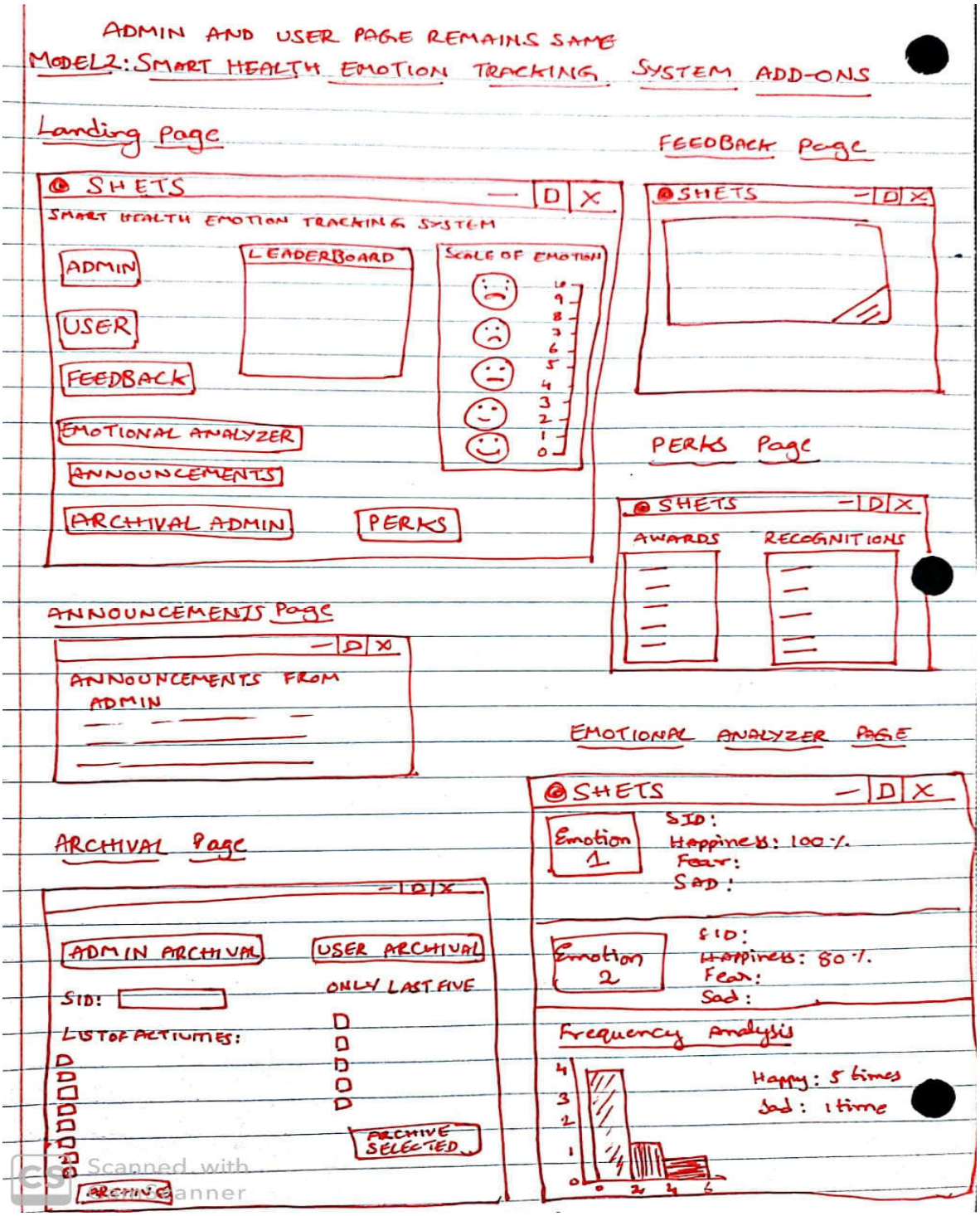
10. Initial Interface Designs:

The two initial designs considered for implementing the proposed smart health tracking system are as follows:

Model 1:



Model 2:



11. Evaluation and Design Recommendations:

- Upon evaluation of both the systems the initial one where the interface is simple to use, and students can navigate is more effective rather than the second one that takes multiple layers of webpage navigation to result to the underlying functionality of the application.
- Not only that, the archival is much more complicated for a simple student activity registration system rather the past and concluded events and their data can be deleted. This reduces the cost incurred on the storage and retrieval of the information.
- Instead of these above stated archival methods it is good to have the last five activities for each user where it is student here as mentioned in the model two.
- The scale of emotions on the second web design is more efficient since its ranging from 0 – 10 and the values have the critical attributes which try to capture the minute of the emotional changes with respect to minute changes in the student perspective.
- The second model also has the leaderboard capabilities and a separate page titled emotional analyzer to have the emotions tracked and analyzed effectively.

12. Conclusion

Thus, in conclusion considering the design goals and user priorities and ways to make students use the smart health tracking system, Model 2 has been adopted for development.

Model 2 seems to be best in terms of aesthetic appeal and follows minimalistic design while prioritizing and placing the user experience as top priority.