Emotion detection and mental health analysis system

Testing Plan & Report

Version 1.0

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1. Document Change Log

Change Date	*Changed By*	*Version*	*Change Description*
05/21/2023	*Rongcheng Li*	*1.0*	*Final version*

2. Table of Contents

3. Testing Plan

3.1. Overview of the Testing Plan

The purpose of this test plan is to ensure the successful implementation and delivery of the Emotion detection and mental health analysis system by validating its functionality, performance.

3.2. Testing Methods

3.2.1. GUI Functional Testing

Steps:

1. Test Case Design:
   - Identify functional requirements, use cases, and user stories.
   - Create test cases that cover various scenarios, positive and negative test cases, and boundary conditions.
2. Test Environment Setup:
   - Set up the required hardware, software, and test data.
3. Test Execution:
   - Execute the test cases according to the test schedule.
   - Record test results, including any deviations or defects encountered during testing.
4. Defect Reporting:
   - Log any defects or issues identified during the test execution.
5. Defect Resolution:
   - The development team analyzes and resolves reported defects.
   - Retest the resolved defects to ensure they have been successfully addressed.
6. Test Completion:

Scenarios:

1. Login Page Functional Testing
   - Verify that users can successfully log in
2. Home Page Functional Testing
   - Ensure that the home page displays the expected navigation menu and links.
   - Verify that clicking on different navigation elements correctly redirects users to the respective pages.
   - Test the responsiveness of the navigation menu
3. Emotion Detection Page Functional Testing
   - Test the image selection feature to ensure users can select an image successfully.
   - Verify that the selected image is displayed correctly on the detection page.
   - Validate the emotion prediction results shown on the detection page.
4. Report Page Functional Testing
   - Check that the report page displays the pie chart accurately based on the provided data.

3.2.2. Detection Model Accuracy Testing

Use test and validation accuracy as metrics to measure the effectiveness of the emotion detection functionality.

Test Accuracy:
Test accuracy is calculated by dividing the number of correctly predicted instances by the total number of instances in the test dataset.

$$Test\ Accuracy = \frac{Number\ of\ correctly\ predicted\ instances}{Total\ number\ of\ instances\ in\ the\ test\ dataset}$$

Validation Accuracy:
Validation accuracy is calculated using the same formula as test accuracy, but it is applied to the validation dataset.

$$Validation\ Accuracy = \frac{Number\ of\ correctly\ predicted\ instances}{Total\ number\ of\ instances\ in\ the\ validation\ dataset}$$

Both test and validation accuracy are expressed as a percentage, representing the proportion of correctly predicted instances in the respective datasets.

4. Testing Report

4.1. Overview of the Testing

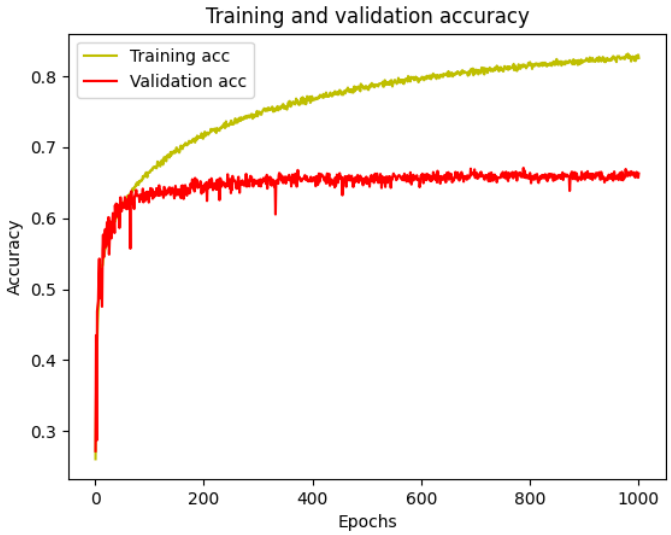
During the testing, we thoroughly checked all the system's functionality and found that there were no errors. However, during the classification testing, we did encounter errors in some cases.

4.2. Error Report

During the testing, the following errors were identified:

4.2.1. Emotional classification error

During the testing, drafted the accuracy curve for each training epoch. However, it is worth mentioning that we encountered some errors during the training process.



To further enhance the accuracy of our model, there are several steps that can be considered for future improvements:

- Data cleaning
- Modify model parameters
- Change model, like RNN, LSTM or Transformer
- Change dataset

5. `Contributions

<Please provide the contributions of team members of your group.>

Student ID	Name (in Pinyin/Chinese)	Contribution (in %)	Responsibilities/Work Done	Remarks
2130026074	Rongcheng LI	20%	Building Detection model	good
2130026071	Jianwen Li	20%	Data analysis and implement human object detect	good
2130026137	Shiyan Wang	20%	Collect background information and design ppt	good
2130026091	Zeyu Liu	20%	GUI designer	good
2130026059	Yixuan JI	20%	Data analysis	good