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CMPE-491

Test Plan Report

MAI Therapist

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# Test Strategy

## Testing Levels:

1. Unit Testing: Test individual components and function of web app & AI model that analyze emotions by facial expressions and voice tone.
2. Integration Testing: Test the integration of components to make sure that they work together correctly. Test the AI model with the video recording functionality to ensure that the analysis is performed correctly on the recorded session.
3. System Testing: Test the overall system to verify its performance, functionality and usability.
4. Acceptance Testing: Test the web app with the requirements/expectations of the end users & conduct test with real therapists to validate the app’s analysis results.

## Testing Types:

1. Functional Testing: Verify that AI model detects and analyzes emotions accurately, using gestures, facial expressions and voice tone. And verify all the functions and features of the web app works well.
2. Usability Testing: Evaluate the app's user experience for therapists, ensuring it’s easy to navigate.
3. Performance Testing: Test the app’s performance under different conditions. For example, response times & generating analysis results.
4. Security Testing: Test the app’s security measures to protect the user and client data. Like session records and card information.
5. Compatibility Testing: Ensure that the app works well across different devices, browsers and OSs.
6. Regression Testing: Re-test previously working features to ensure they still work after changes/updates.

## Testing Techniques:

1. Black Box Testing: Validate the app's functionality from an external perspective without knowledge of its internal workings.
2. White Box Testing: Test the app to verify its correctness of internal algorithms and logic.
3. Exploratory Testing: Test the app by exploring scenarios and paths to discover any unexpected issues or usability concerns.

## Test Coverage:

1. UI Coverage: Ensure that the user interface is thoroughly tested.
2. Analysis Coverage: Test the accuracy of emotion recognition.
3. Error Handling Coverage: Test the error handling and error messages.

## Test Deliverables:

1. Test Plan: Document detailing the test strategy and schedule.
2. Test Cases: Instructions of tests and results.
3. Test Reports: Summery of the test results, including any issues if found.

# Test Schedule

## Test Phases:

1. Planning Phase: Defining the test objectives and timelines. Planning on which tests to do.
2. Preparation Phase: Setting up test environment.
3. Execution Phase: Performing of the tests & recording of the results.
4. Closure Phase: Analyzing the test results and generate test reports. Resolving of the defects.

## Milestones:

1. Completion of Test Planning and Test Plan Approval.
2. Test Environment Setup and Readiness.
3. Completion of Test Case Preparation.
4. Test Execution and Defect Reporting.
5. Completion of Test Analysis and Test Reports.
6. Review and Resolution of Reported Defects.
7. Final Acceptance Testing and Sign-off.

## Resource Allocation:

1. Video Recording Equipment: Ensure availability of suitable cameras and recording devices.
2. AI Analysis Resources: Allocate necessary computational resources and AI models for emotions, gestures, facial expressions, and voice tone analysis.
3. Time: Allocate sufficient time for planning, preparation, execution, and analysis

# TEST EXECUTION

Test Execution Process:

- Set up the necessary hardware and software components in the testing environment.

- To test it out, install and set up the client web interface.

- Create the accounts and access rights for AWS services (such as AWS Rekognition, AWS S3, and DynamoDB) as needed.

- Make sure the system is able to connect to the AWS cloud services.

## Test Logs and Defect Tracking:

- Create a test log template to record test execution details, including test case ID, description, actual results, and any defects encountered.

- To record and monitor any issues or defects discovered during test execution, use a defect tracking system or tool.

- Document steps to reproduce any identified defects for easier troubleshooting and resolution.

## Test Results Reporting:

- Run test cases to confirm the application's functionality.

- Log the actual outcomes of each test case in the test log, taking note of any departures from the intended course of events.

- Record any errors that occur during execution and give the proper severity levels.

- Add each test case's execution state (pass, fail, or blocked) to the test log.

- Produce test result summaries that include the number of executed, passed, failed, and blocked test cases as well as a summary of the overall test execution process.

- Include thorough details on any flaws discovered, their effects, and reproduction procedures, as well as suggestions for fixing the problems.

# ROLES AND RESPONSIBILITIES

## Test Team Members:

- Test Manager: In charge of organizing, managing, and planning the complete testing process. Ensures that the test plan is successfully carried out and produces reliable findings.

- Test Lead: Assists the test manager in planning and executing the testing tasks. Collaborates with the development team and stakeholders to prioritize test cases and ensure timely execution.

- Test Analysts/Testers: In charge of designing and executing test cases, documenting test results, and reporting defects. Collaborates with the development team to identify and resolve problems.

- Automation Testers: Develops and maintains automated test scripts and frameworks. Carries out automated tests to increase test efficiency and coverage.

- AWS Specialist: Provides expertise in setting up and configuring the AWS cloud services required for the project. Assists with integration testing and ensures that AWS components are operating correctly.

- Database Administrator: Manages the DynamoDB database and makes sure that data is correctly stored and retrieved. Collaborates with the testing team to validate data integrity and perform database-related tests.

## Responsibilities:

- Test Manager:

- Creates the test strategy, timetable, and plan of tests.

- Manages the test team and allocates resources.

- Reports to the project manager on the status of testing activities.

- Shares information about test progress, risks, and problems with stakeholders.

- Test Lead:

- Assists in test planning and coordination.

- Collaborates closely with the test manager to prioritize test cases and allocate resources.

- Coordinates with the development team to ensure that bugs are fixed quickly.

- Updates the test manager on issues and reports test progress.

- Test Analysts/Testers:

- Create and carry out test cases in accordance with requirements.

- Document test results and report defects.

- Take part in meetings for defect triage and contribute ideas for fixing defects.

- Work with the development team to identify the root causes of defects.

- Automation Testers:

- Develop and maintain automated test scripts and frameworks.

- Execute automated tests and analyze test results.

- Collaborate with the test team to identify areas for test automation.

- Provide guidance on test automation best practices.

- AWS Specialist:

- Configure and set up the necessary AWS cloud services.

- Ensure that AWS component integration and functioning are correct.

- Perform integration testing in conjunction with the testing team.

- Provide technical expertise in resolving AWS-related issues.

- Database Administrator:

- Manage the DynamoDB database.

- Ensure accurate data retrieval, storage, and integrity.

- Work with the testing team to conduct database-related tests.

- Enhance database performance and troubleshoot issues.

# RISK MANAGEMENT

## Identified Risks:

- Risk 1: Inadequate test coverage: Because of time restrictions, there is a chance that some functionality or edge situations won't get enough testing, which could result in system flaws.

- Risk 2: Resource constraints: The thoroughness and efficiency of the testing process may be impacted by a lack of testing resources, such as qualified testers or appropriate testing equipment.

- Risk 3: Technical challenges with AWS integration: It may be technically challenging to integrate AWS services like Rekognition, S3, and DynamoDB, which could cause delays or problems with video processing, emotion recognition, or data storage.

## Risk Mitigation Strategies:

- Risk 1: To mitigate the risk of insufficient test coverage, a thorough test plan will be designed, prioritizing crucial functionality and identifying key test cases. Test prioritization will be based on requirements analysis and consultation with stakeholders.

- Risk 2: To address resource constraints, efforts will be made to optimize resource allocation by cross-training team members, using automation tools when appropriate, and seeking additional resources as needed. To guarantee effective use of the resources at hand, the team will develop clear communication channels and collaboration.

- Risk 3: To mitigate technical challenges with AWS integration, thorough testing and verification of AWS services' interactions will be performed in a dedicated test environment. Regular communication with AWS support will be maintained to address any technical issues promptly.

## Risk Monitoring:

- Risks will be continuously monitored throughout the project lifecycle, with regular risk assessments and reviews conducted during project meetings. Accordingly, the risk log will be updated, reflecting new risks, modifications to existing risks, and the status of mitigation efforts.