Verification and Validation Report: SE 4G06, TRON 4TB6

Team 26, STRONE
Jordan Bierbrier
Azriel Gingoyon
Taranjit Lotey
Udeep Shah
Abraham Taha

March 7, 2023

1 Revision History

Date	Version	Notes
Date 1	1.0	Notes
Date 2	1.1	Notes

2 Symbols, Abbreviations and Acronyms

symbol	description
T	Test

[symbols, abbreviations or acronyms – you can reference the SRS tables if needed —SS]

Contents

List of Tables

List of Figures

This document ...

3   Functional Requirements Evaluation

Id	Ref	Description	Input	Expected Result	Actual Result	Result
FRT1	FR1, FR2	Testing ability to differentiate sounds	Five different sounds	Device produces five different feedbacks		Pass
FRT2	FR1	Testing in different environments	Same sound in different environments	Same feedback in all enviroments		Fail
FRT3	FR1	Testing at different ranges	Same sound at specified distances	Same feedback at specified distances		TBD
FRT4	FR1	Testing its ability to ignore ambient noise	No input	No output		
FRT5	FR2	Testing its ability to classify correctly	Different specified words	Feedback based on correct classification		

FRT6	FR2	Testing variability in speech	Same word said by four different people	Same feedback for all		
FRT7	FR2	Testing its ability to ignore high amplitude random sounds	Random not specified sounds	No haptic feedback		
FRT8	FR3	Testing newly set classifications	A newly set classification sound	The specified haptic feedback		
FRT9	FR3	Testing removed classifications	A removed classification sound	No feedback		
FRT10	FR3	Testing reboot and memory retention	Power switched on and off and test FRT5 run again	Feedback based on correct classification		
FRT11	FR4	Testing haptic feedback with the device worn	Specified sound	Haptic feedback based on the sound's classification		

FRT12	FR4	Testing variability in haptic feedbacks	Three different specified sounds	Different haptic feedbacks that convey the specified sounds		
FRT13	FR4	Testing different wearable orientations	FRT12 run on different orientations	All orientations give consistent output		
FRT14	FR4	Testing intensity of feedback wearing different clothes of varying thickness	FRT12 run on three different clothes	All clothes give consistent results		
FRT15	FR5	Testing real-time application of device	Specified sound	Correct classification within one second		

4 Nonfunctional Requirements Evaluation

4.1 Usability

4.2 Performance

4.3 etc.

5 Comparison to Existing Implementation

This section will not be appropriate for every project.

6 Unit Testing

Id	Ref	Description	Input	Expected Result	Actual Result	Result
UT1	test-id1	Testing accuracy of the microphone to detect sounds	3 Different Sample Recordings	3 Distinct Sample Recordings in memory buffer that match the inputs respectively		Pass
UT2?	test-id1	Testing bluetooth's ability to transfer digital sound recordings accurately	Digital Sound Recording	Same digital sound recording at the receiver		Fail
UT3	test-id2	Testing bluetooth's ability to send signals accurately	Sample classification signal asserted on software	Feedback signal asserted on hardware		TBD
UT4	test-id1	Testing classification module's ability to accurately categorize sound data	Stored samples of sound data in the memory buffer	Accurately classified Sound Data		
UT5	test-id2	Testing classification module's ability to change its sound classification settings	New Classification settings	Classification settings have been changed on the app		

UT6	test-id1	Testing feedback module's ability to transmit accurate feedback signals according to the settings	Feedback signal is asserted	Vibration detected in the bracelet that coincides with the feedback signal		
UT7	test-id1	Testing bluetooth connection ability	Enable bluetooth connection	Bluetooth connection connected in under a minute		
UT8	test-id2	Testing bluetooth connection's ability when devices go in and out of range	Separate the connected devices 10 or more metres away, wait at least 5 seconds, then bring the devices closer together	Bluetooth will disconnect and reconnect when devices are back in range to each other		
UT9	test-id1	Testing noise filtering module's ability to remove noise from a sample sound	Digital data with one or more sounds	Same digital sound recording but with less noise		

| UT10 | test-id2 | Testing app interface's ability to respond quickly to a user input | User input | User Interface response within 1ms | | |
| UT11 | test-id3 | Testing app interface's ability to respond the same across different systems (Android, Windows, IOS) | User Input | Same User Interface response on all the different devices | | |

7 Changes Due to Testing

8 Automated Testing

9 Trace to Requirements

10 Trace to Modules

11 Code Coverage Metrics

References

Appendix — Reflection

The information in this section will be used to evaluate the team members on the graduate attribute of Lifelong Learning. Please answer the following questions:

1.

2.