SOFTWARE TESTING DOCUMENT

(v1.0)

PROJECT:

Visualization of the Human Cognition Using Brain Data

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PREFACE

This document includes test specifications, test types and test cases for Cerebra.

– Cerebra and the document is prepared according to the “IEEE Standard for Software and System Test Documentation – IEEE Std 829 – 2008”.

This document provides complete test cases for CEREBRA.

The first section of the document contains introduction and scope of the document which specifies the intended audience for the document.

The second section includes details for the system test plan, general features to be tested and not tested and testing approach taken when the test is conducted.

The third section includes test management, and the fourth section contains details of each of the test cases.

The final section shows the general test process, overall results and comments about test cases.

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1 Introduction

To describe all the testing that had been conducted for CEREBRA desktop application, this Software Test Document (STD) were prepared in order to ease the testers to design and perform the essential test that would help improving the quality of the application. Moreover, It can also be a proof that the system that we build is working as same as the requirement that mentioned in System Requirement Specification (SRS).

1.1 Document Identifier

This is the Version 1.0 of Software Test Document for CEREBRA desktop application. Intended audience will be the evaluator of METU computer engineering graduation project and the users of the project. IEEE Std 829-2008 is used as reference for this Software Test Document.

1.2 Scope

The detail description of the testing phases will be provided in this document. It will mainly test the objective of the program at the first place by observing their input and output of the test. The documentation will be limited to System Testing as the project is not in the big scale system beside System testing is sufficient for this kind of project.

The test mainly will be based on the System Requirement Specification. Therefore, the functional requirement and the user cases will be tested on the product whether it satisfies the requirement or not.

Inspection, Analysis, demonstration, verification, and validation will be considered while testing each test case.

1.3 References

- Cerebra – Kernel Panic, Software Requirements Specification (SRS) – 03.01.2015,
- Cerebra – Kernel Panic, Software Design Descriptions (SDD) – 01.03.2015,
- IEEE Std 829-2008

1.4 Level in the overall test

1. Integration testing: The next level of testing is often called integration testing. In this level, modules in Cerebra are combined together into different subsystems, which are then tested. The goal here is to see if the modules can be integrated properly. Hence, the emphasis is on testing interfaces between modules. This testing activity can be considered testing the design.
2. System testing: Here the entire software system is tested. The reference document for this process is the requirements document, and the goal is to see if the software meets its requirements. This is essentially a validation exercise.
3. Acceptance testing: Acceptance Tests are the tests will be performed by the stakeholders to validate the system to see if the system meet their needs or not. Acceptance Tests will be performed after the system test and performance tests.

In this document we have only done system testing as single level testing was the only required testing process for this project. However, we are planning to do acceptance testing with Image Processing Laboratory staff. They will give us feedbacks whether the system meet their needs or not.

1.5 Test classes and overall test conditions

Test classes are divided according to the functional requirements that can be found in SRS document of Cerebra. Cerebra desktop application is tested on different machines which has Windows Operating System.

2 Details for System Test Plan

2.1 Test Items and Their Identifiers

Cerebra is a desktop application that can be downloaded through our website “kernelpanic.kamy.me”. To install the system properly, there will be a user manual to direct users. Furthermore, Cerebra is an independent system. Therefore, the only test item is the Cerebra System itself.

2.2 Test Traceability Matrix

Test Name	Potato Print	Voxel Suppression	MNI Conversion	Brain Template	Animation	Config File	Exe File
Cerebra.1-1						x	
Cerebra.1-2						x	
Cerebra.1-3						x	
Cerebra.2-1							x
Cerebra.2-2							x
Cerebra.3-1			x			x	
Cerebra.3-2			x			x	
Cerebra.3-3			x			x	
Cerebra.4-1				x			
Cerebra.4-2				x			
Cerebra.4-3				x			
Cerebra.5-1	x						
Cerebra.5-2	x						
Cerebra.5-3	x			x			
Cerebra.5-4	x		x				
Cerebra.5-5	x						
Cerebra.5-6	x						
Cerebra.6-1		x					
Cerebra.6-2		x					
Cerebra.6-3		x					
Cerebra.6-4		x	x				
Cerebra.6-5		x					
Cerebra.7-1					x		
Cerebra.7-2					x		

Table 1: Test Traceability Matrix

2.3 Features to be Tested

These System test document will only test system function of the application. System Requirement Specifications document will be used to prepared the test cases to plot the test scenario. The system functions that will be test are:

- Potato Print
- Voxel Suppression
- MNI Conversion
- Brain Template

- Animation
- Load File with Config Spec
- Exe File

2.4 Features Not to be Tested

Interface Requirement and nonfunctional requirement will not be tested on this STD. However, it will still be inspected independently out of this document. The entire functional requirements that are mentioned in the SRS are tested and analyzed in this document.

2.5 Approach

White-box method, which tests the internal structure and workings of the software, is used based on our knowledge of internal perspective and implementation of Cerebra.

2.6 Item Pass / Fail Criteria

In this testing report we may consider faults in two categories; deficiency and defect. Deficiencies are faults that do not block the software from its functionality. Defects are faults that stop or break down the software from running and they do not meet the requirements.

The result is evaluated in three criteria which are pass, fail and no run. Pass means that the test case is run and no defects or deficiencies are observed. Fail means that the test procedure includes a defect so it does not meet requirements. No Run means that test case is not executed since implementation of related module is not complete yet.

After the tests are run, the failed ones will be analyzed and required changes will be done accordingly. After the changes are done then we will evaluate the situation and select a case in terms of regression. There will be regression which means the segment of the code where the change is made should be evaluated and some test cases may be run again. Lastly there will be full regression which means the changes affected general program structure so all changes should run again.

2.7 Test Deliverables

This document contains test procedure specifications that explain the steps for executing all test cases given in the following sections and the results of each test case. It is prepared based on IEEE Standard for Software and System Test Documentation.

3 Test Management

3.1 Test Progression / Planned Activities and Tasks

Our testing mechanism is based on the features we added to our application. Basically, when we add a new feature to our system we tested that feature as a separate entity and then we have combined this feature with other feature of the system and tested them as a whole. That's why, we have followed a cumulative approach when we test our application, and so the test progression is simply about testing each unit and then testing them as one entity.

When we saw an error after we test an entity, then we solved the problem before we integrate that feature to our system. Otherwise, we could face a situation such that we could lose our working features as well.

Also, if we did not see any problem after we tested that module separately but it became problematic after integrated with other modules, we fixed the problem and then we retested the module itself and with other modules as well.

Thus, as a result, the test progression is carried out as double testing, one for unit testing and one for system testing after implementation of each module of the system.

3.2 Environment

Only environment the system needs is a computer which has Windows Operating System.
And also, the user has to have suitable brain data on the computer to load to the system.

4 Test Case Details

In this section, we will explain the detail information about test cases for each functional requirement. Moreover, each test case composes of the objective, input, outcome, environmental needs, special procedural requirements and intercase dependencies.

4.1 Test Case: Load file with CONFIG specification

4.1.1 Test Case: Load file with CONFIG specification – 1

Test Case id	**Cerebra.1 - 1**
Objective	This test case aims to verify that if the loaded file is wrong, whether error message will occur or not.
Input	Any input file which is not fMRI input data will be provided by the user.
Outcome	Error message will come up and notify the user that called “Sorry we couldn’t load that data”
Environmental needs	Executable.
Special procedural requirements	Executable file should be run.
Intercase Dependencies	Cerebra.2 Executable File Test should be done before the user try to add load file.

Table 2 - Load file with CONFIG specification – 1

4.1.2 Test Case: Load file with CONFIG specification – 2

Test Case id	**Cerebra.1 - 2**
Objective	This test case aims to verify that whether whole data could be loaded or not.
Input	fMRI data is needed to be provided by user.
Outcome	On the screen, whole brain voxels are shown in right coordinates and shades.
Environmental needs	Executable, input file.
Special procedural requirements	Executable file should be run.
Intercase Dependencies	CEREBRA.2 Executable File Test should be done before the user try to add load file.

Table 3 - Load file with CONFIG specification – 2

4.1.3 Test Case: Load file with CONFIG specification – 3

Test Case id	**Cerebra.1 - 3**
Objective	This test case aims to verify that whether big data could be loaded or not.
Input	Big fMRI data is needed to be provided by user.
Outcome	On the screen, whole brain voxels are shown in right coordinates and shades.
Environmental needs	Executable, input file.
Special procedural requirements	Executable file should be run.
Intercase Dependencies	CEREBRA.2 Executable File Test should be done before the user try to add load file.

Table 4 - Load file with CONFIG specification – 3

4.2 Test Case: Executable File Test

4.2.1 Test Case: Executable file – 1

Test Case id	**Cerebra.2-1**
Objective	This test case aims to verify that whether exe file working correctly.
Input	fMRI input data will be provided by the user.
Outcome	Exe file works correctly with all analyzing options and animation process
Environmental needs	Executable and Input File.
Special procedural requirements	-
Intercase Dependencies	-

Table 5 - Executable file – 1

4.2.2 Test Case: Executable file – 2

Test Case id	**Cerebra.2-2**
Objective	This test case aims to verify that whether exe file easy to use or not.
Input	fMRI input data will be provided by the user.
Outcome	Executable file works with just a double click operation and processes can be added easily. Moreover, exe file do not need Unity system to execute. Therefore, it is easy to use.
Environmental needs	Executable and Input File.
Special procedural requirements	-
Intercase Dependencies	-

Table 6 - Executable file – 2

4.3 Test Case: MNI Space Conversion

4.3.1 Test Case: MNI Space Conversion – 1

Test Case id	**Cerebra.3-1**
Objective	This test case aims to verify that whether brain template exactly fits voxels converted to MNI space or not.
Input	fMRI input data will be provided by the user.
Outcome	After converting voxels to MNI coordinates, brain template will cover and exactly fit all the voxels.
Environmental needs	Executable and Input File.
Special procedural requirements	Executable file should be run, Input file should be loaded and MNI conversion process should be selected.
Intercase Dependencies	CEREBRA.2 Executable File Test and CEREBRA.1 Load file with CONFIG specification Test should be done first before user can start adding MNI Space Conversion process.

Table 7 - MNI Space Conversion – 1

4.3.2 Test Case: MNI Space Conversion – 2

Test Case id	**Cerebra.3-2**
Objective	This test case aims to verify that whether MNI coordinates are read correctly or not.
Input	fMRI input data will be provided by the user.
Outcome	After read operation of MNI coordinates, this coordinates are checked and they are all correct.
Environmental needs	Executable and Input File.
Special procedural requirements	Executable file should be run, Input file should be loaded and MNI conversion process should be selected.
Intercase Dependencies	CEREBRA.2 Executable File Test and CEREBRA.1 Load file with CONFIG specification Test should be done first before user can start adding MNI Space Conversion process.

Table 8 - MNI Space Conversion – 2

4.3.3 Test Case: MNI Space Conversion – 3

Test Case id	**Cerebra.3-3**
Objective	This test case aims to verify that whether coordinates of voxels converted to MNI space correctly or not.
Input	fMRI input data will be provided by the user.
Outcome	After conversion, coordinates of voxels checked and new coordinates which are MNI space are correct.
Environmental needs	Executable and Input File.
Special procedural requirements	Executable file should be run, Input file should be loaded and MNI conversion process should be selected.
Intercase Dependencies	CEREBRA.2 Executable File Test and CEREBRA.1 Load file with CONFIG specification Test should be done first before user can start adding MNI Space Conversion process.

Table 9 - MNI Space Conversion – 3

4.4 Test Case: Brain Template Model

4.4.1 Test Case: Brain Template Model - 1

Test Case id	**Cerebra.4 - 1**
Objective	This test case aims to verify that when template is added to brain voxel whether template can be cover whole voxels or not.
Input	It can be shown, after input file loaded.
Outcome	On the screen, whole brain voxels are shown in right coordinates and shades.
Environmental needs	Executable, input file.
Special procedural requirements	Executable file should be run, Input file should be loaded and voxels should be rendered before.
Intercase Dependencies	CEREBRA.2 Executable File Test and CEREBRA.1 Load file with CONFIG specification Test should be done first before inserting brain template.

Table 10 - Brain Template Model - 1

4.4.2 Test Case: Brain Template Model - 2

Test Case id	**Cerebra.4 - 2**
Objective	This test case aims to verify that whether brain template's transparency can be set up by users.
Input	On the right hand side on the screen sliders can be used for adjustment of transparency to desired transparency level.
Outcome	On the brain level, transparency of the template can be change correctly according to given level from the sliders.
Environmental needs	Executable, input file.
Special procedural requirements	Executable file should be run, Input file should be loaded and voxels should be rendered before.
Intercase Dependencies	CEREBRA.2 Executable File Test and CEREBRA.1 Load file with CONFIG specification Test should be done first before inserting brain template.

Table 11 - Brain Template Model - 2

4.4.3 Test Case: Brain Template Model - 3

Test Case id	**Cerebra.4 - 3**
Objective	This test case aims to verify that whether brain template can be rotate correctly with the rendered voxels.
Input	Brain voxels are rotated by mouse click.

Outcome	Brain template rotates together voxels in same direction and axis.
Environmental needs	Executable, input file.
Special procedural requirements	Executable file should be run, Input file should be loaded and voxels should be rendered before.
Intercase Dependencies	CEREBRA.2 Executable File Test and CEREBRA.1 Load file with CONFIG specification Test should be done first before inserting brain template.

Table 12 - Brain Template Model – 3

4.5 Test Case: Potato Print

4.5.1 Test Case: Potato Print – 1

Test Case id	**Cerebra.5-1**
Objective	This test case aims to verify that whether the axis of potato print process are taken correctly or not.
Input	fMRI input data will be provided by the user.
Outcome	Potato print process are observed for x, y and z axis and results for all axes are correct.
Environmental needs	Executable and Input File.
Special procedural requirements	Executable file should be run, Input file should be loaded and Potato Print process should be selected.
Intercase Dependencies	CEREBRA.2 Executable File Test and CEREBRA.1 Load file with CONFIG specification Test should be done first before user can start adding Potato Print process.

Table 13 - Potato Print – 1

4.5.2 Test Case: Potato Print – 2

Test Case id	**Cerebra.5-2**
Objective	This test case aims to verify that if the given axis is wrong, whether error message will occur or not.
Input	fMRI input data will be provided by the user.
Outcome	After giving invalid axis, brain template will disappear and no warning message will be shown for now.
Environmental needs	Executable and Input File.
Special procedural requirements	Executable file should be run, Input file should be loaded and Potato Print process should be selected.

Intercase Dependencies	CEREBRA.2 Executable File Test and CEREBRA.1 Load file with CONFIG specification Test should be done first before user can start adding Potato Print process.

Table 14 - Potato Print – 2

4.5.3 Test Case: Potato Print – 3

Test Case id	**Cerebra.5-3**
Objective	This test case aims to verify that whether brain template will disappear or not in this process.
Input	fMRI input data will be provided by the user.
Outcome	After selecting this process, brain template will disappear as expected.
Environmental needs	Executable and Input File.
Special procedural requirements	Executable file should be run, Input file should be loaded and Potato Print process should be selected.
Intercase Dependencies	CEREBRA.2 Executable File Test and CEREBRA.1 Load file with CONFIG specification Test should be done first before user can start adding Potato Print process.

Table 15 - Potato Print – 3

4.5.4 Test Case: Potato Print – 4

Test Case id	**Cerebra.5-4**
Objective	This test case aims to verify that whether this process works properly with MNI conversion or not.
Input	fMRI input data will be provided by the user.
Outcome	After selecting this process in MNI coordinates, potato print process works for some slices but fails for some of them.
Environmental needs	Executable and Input File.
Special procedural requirements	Executable file should be run, Input file should be loaded, MNI conversion should be done and Potato Print process should be selected.
Intercase Dependencies	CEREBRA.2 Executable File Test, CEREBRA.1 Load file with CONFIG specification Test and CEREBRA.3 MNI Space Conversion Test should be done first before user can start adding Potato Print process.

Table 16 - Potato Print – 4

4.5.5 Test Case: Potato Print – 5

Test Case id	**Cerebra.5-5**
Objective	This test case aims to verify that whether double click of a slice works properly or not.
Input	fMRI input data will be provided by the user.
Outcome	After selecting this process and double clicking one slice, this slice will cover whole screen without any trouble.
Environmental needs	Executable and Input File.
Special procedural requirements	Executable file should be run, Input file should be loaded and Potato Print process should be selected.
Intercase Dependencies	CEREBRA.2 Executable File Test and CEREBRA.1 Load file with CONFIG specification Test should be done first before user can start adding Potato Print process.

Table 17 - Potato Print – 5

4.5.6 Test Case: Potato Print – 6

Test Case id	**Cerebra.5-6**
Objective	This test case aims to verify that whether turning back after double clicking works properly or not.
Input	fMRI input data will be provided by the user.
Outcome	After pressing back button, double click process turns back to 4 slice view as expected.
Environmental needs	Executable and Input File.
Special procedural requirements	Executable file should be run, Input file should be loaded, Potato Print process should be started and One slice should be double clicked.
Intercase Dependencies	CEREBRA.2 Executable File Test and CEREBRA.1 Load file with CONFIG specification Test should be done first before user can start adding Potato Print process.

Table 18 - Potato Print – 6

4.6 Test Case: Voxel Suppression

4.6.1 Test Case: Voxel Suppression – 1

Test Case id	**Cerebra.6 - 1**
Objective	This test case aims to verify that whether histogram gives true values to user according to intensity values.
Input	fMRI data shoud be loaded and Voxel Suppression process can be run.
Outcome	After the voxel suppression process run, histogram is shown left side of the screen as a pop-up screen.
Environmental needs	Executable, input file.
Special procedural requirements	Executable file should be run, Input file should be loaded, voxels should be rendered before and voxel suppression process can be run.
Intercase Dependencies	CEREBRA.2 Executable File Test and CEREBRA.1 Load file with CONFIG specification Test should be done and voxel suppression process could be done.

Table 19 - Voxel Suppression – 1

4.6.2 Test Case: Voxel Suppression – 2

Test Case id	**Cerebra.6 - 2**
Objective	This test case aims to verify that whether histogram can be threshold right voxels according to given intensity range.
Input	fMRI data should be loaded and Voxel Suppression process can be run and intensity range should be given .
Outcome	After the voxel suppression process run, histogram is shown left side of the screen as a pop-up screen and rested intensities are shown in histogram. Voxels not in range, are hidden from the screen.
Environmental needs	Executable, input file.
Special procedural requirements	Executable file should be run, Input file should be loaded, voxels should be rendered before and voxel suppression process can be run.
Intercase Dependencies	CEREBRA.2 Executable File Test and CEREBRA.1 Load file with CONFIG specification Test should be done and voxel suppression process could be done.

Table 20 - Voxel Suppression – 2

4.6.3 Test Case: Voxel Suppression – 3

Test Case id	**Cerebra.6 - 3**
Objective	This test case aims to verify that whether voxel suppression process can be run correctly after it normalized.
Input	fMRI data should be loaded and Voxel Suppression process can be run and intensity range should be given and Normalize Intensity values process can be run.
Outcome	After the "Normalize Intensity Values" process run, voxels can be normalize correctly according rested intensity values.
Environmental needs	Executable, input file.
Special procedural requirements	Executable file should be run, Input file should be loaded, voxels should be rendered before and voxel suppression process can be run.
Intercase Dependencies	CEREBRA.2 Executable File Test and CEREBRA.1 Load file with CONFIG specification Test should be done and voxel suppression process could be done.

Table 21 - Voxel Suppression – 3

4.6.4 Test Case: Voxel Suppression – 4

Test Case id	**Cerebra.6 - 4**
Objective	This test case aims to verify that whether voxel suppression should be run correctly after MNI conversion process run.
Input	fMRI data should be loaded and Voxel Suppression process can be run and intensity range should be given and MNI Conversion process can be run.
Outcome	After MNI Conversion is done, voxels which are in MNI coordinates are suppressed correctly.
Environmental needs	Executable, input file.
Special procedural requirements	Executable file should be run, Input file should be loaded, voxels should be rendered before and voxel suppression process can be run. Also, MNI conversion method should be run.
Intercase Dependencies	CEREBRA.2 Executable File Test, CEREBRA.1 Load file with CONFIG specification Test and CEREBRA.3 MNI Space Conversion should be done and voxel suppression process could be done.

Table 22 - Voxel Suppression – 4

4.6.5 Test Case: Voxel Suppression – 5

Test Case id	**Cerebra.6 - 5**
Objective	This test case aims to verify that whether histogram gives true values to user according to intensity values.
Input	fMRI data should be loaded and Voxel Suppression process can be run.
Outcome	After the voxel suppression process run, brain template still appears on the screen.
Environmental needs	Executable, input file, time series fMRI data.
Special procedural requirements	Executable file should be run, Input file should be loaded, voxels should be rendered before brain template's become more opaque to show clearly.
Intercase Dependencies	CEREBRA.2 Executable File Test, CEREBRA.1 Load file with CONFIG specification Test and CEREBRA.4 Brain Template Model should be added and voxel suppression process could be done.

Table 23 - Voxel Suppression – 5

4.7 Test Case: Animation

4.7.1 Test Case: Animation – 1

Test Case id	**Cerebra.6 - 1**
Objective	This test case aims to verify that whether change on the voxels intensities are shown to user correctly or not.
Input	fMRI data should be loaded and animation process is selected.
Outcome	Voxels are colored according to given intensity values during the time.
Environmental needs	Executable, input file.
Special procedural requirements	Executable file should be run, Input file should be loaded, voxels should be rendered and time series fMRI data should be loaded.
Intercase Dependencies	CEREBRA.2 Executable File Test, CEREBRA.1 Load file with CONFIG specification Test should be done

Table 24 - Animation – 1

4.7.2 Test Case: Animation – 2

Test Case id	**Cerebra.6 - 1**
Objective	This test case aims to verify that whether animation process can be works correctly after huge amount of data is load .
Input	fMRI data should be loaded and animation process is selected.
Outcome	Voxels are colored according to given intensity values during the time but animation procedure frozen after 1-2 seconds.
Environmental needs	Executable, input file, time series fMRI data.
Special procedural requirements	Executable file should be run, Input file should be loaded, voxels should be rendered and time series fMRI data should be loaded.
Intercase Dependencies	CEREBRA.2 Executable File Test, CEREBRA.1 Load file with CONFIG specification Test should be added and time series data should be uploaded before animation for big data testing.

Table 25 - Animation – 2

5 System Test Report Details

5.1 Overview of the Test Results

It can be easily seen from the test results that project has passed almost all of the test results. However three tests could partially passed not fully passed. Therefore, we need to solve this partially passed cases. Moreover, if we see any other unexpected behavior, more tests will be applied to see whether any other flaws exist or not. If any other flaws can be found, they will be also fixed.

5.2 Results of the Test Cases

Test Name	Result
Cerebra.1-1	**Passed**
Cerebra.1-2	**Passed**
Cerebra.1-3	**Passed**
Cerebra.2-1	**Passed**
Cerebra.2-2	**Passed**
Cerebra.3-1	**Passed**
Cerebra.3-2	**Passed**
Cerebra.3-3	**Passed**
Cerebra.4-1	**Passed**

Cerebra.4-2	**Passed**
Cerebra.4-3	**Passed**
Cerebra.5-1	**Passed**
Cerebra.5-2	**Not Passed**
Cerebra.5-3	**Passed**
Cerebra.5-4	**Not Passed**
Cerebra.5-5	**Passed**
Cerebra.5-6	**Passed**
Cerebra.6-1	**Passed**
Cerebra.6-2	**Passed**
Cerebra.6-3	**Passed**
Cerebra.6-4	**Passed**
Cerebra.6-5	**Passed**
Cerebra.7-1	**Passed**
Cerebra.7-2	**No Run**

Table 26 – Results of Test Cases

5.3 Conclusions and Recommendations

To conclude, our project has passed almost all of the tests and not passed parts will be fixed as soon as possible. Moreover, if we faced more bugs on our project, we will also handle them. Moreover, after adding more analyzing options and animation with big data, we need to add more tests to see whether these new added properties work properly and intercorporate with the old ones.

5.4 Glossary for Acronyms

IEEE	Institute of Electrical and Electronics Engineers
User	A person who uses the system
SRS	Software Requirements Specification
SDD	Software Design Documents
STD	Software Test Document
Voxel	Tiny brain volumes
3D	3 Dimensional

CSV	“Comma Separated Value” file format
fMRI	Functional Magnetic Resonance Imaging
GPU	Graphics Processing Unit
GUI	Graphical User Interface
IDE	Integrated Development Environment
IEEE	Institute of Electrical and Electronics Engineers
MATLAB	Matrix Laboratory
METU	Middle East Technical University
MNI	Montreal Neurological Institute
RAM	Random Access Memory
UML	Unified Modeling Languages
Unity3d	Unity is a cross-platform game creation system developed by Unity Technologies, including a game engine and integrated development environment (IDE).

Table 27 – Acronyms

5.5 Document Revision History

Document ID	Date	Version	Status	Author
CEREBRA – STD 1.0	02.05.2015	1.0	Created	Kernel Panic

Table 28 – Revision History