**Computer Vision for Assembly Line**

**(CVAL)**

**Software Testing Document**

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**1. Overview**



**1.1 Purpose**  
The purpose of the test plan is to ensure the proper working of the CVAL, such that it is thoroughly tested, resulting in a successful implementation of new functionality interfaces. The test plan will make sure that it covers all the functionalities with the available resources. The principal resources are:

* Provide assessment for implementation builders.
* Help implementation builders achieve interoperability.

**1.2 Scope**

This software system will be providing computer vision to an assembly line in the die manufacturing unit of client’s company. However, the system provided can be considered general and will be implementable in the assembly line for any other manufacturing unit. This system is designed to maximize the productivity of the client’s manufactures by providing a tool to detect defects in the manufactured goods on the assembly line which would otherwise have to be performed manually.

When conducting the test process, it is important to examine the software in its interactions with the other parts of the system which was very well ensured. This document identifies the system considerations that test processes and tasks address in determining system and software correctness and other attributes like completeness, accuracy, consistency, and testability.

**1.3 Definitions, acronyms and abbreviations**

|  |  |
| --- | --- |
| Test Approach | Testing approach followed here is a Black Box Testing |
| Test Case | A set of test inputs, execution conditions, and expected results developed for a particular objective, such as to exercise a particular program path or to verify compliance with a specific  requirement |
| CVAL | Computer Vision for Assembly Line Software |
| Product | Manufactured goods coming out on the assembly line |
| Operator | Person responsible for removing the defected objects |

**1.4 References**

* A concise Introduction to Software Engineering, Pankaj Jalote
* SRS of CVAL
* SDD of CVAL
* IEEE Standard for Software and System Test Documentation

**2. Testing Synopsis**



**2.1 Items to be tested**

The system will be tested for all the functional requirements specified in the SRS documents.

**2.2 Items not to be tested**

Any requirements not specified in the SRS documents will not be tested

**3. Types of Testing**



**3.1 Feature Testing**

|  |  |  |  |
| --- | --- | --- | --- |
| **Functional Requirement/Testing** | **Unit Testing** | **System Testing** | **Regression Testing** |
| Defect Logging | **Y** | **Y** | **Y** |
| Authorization of Operator | **Y** | **Y** | **Y** |
| Image Processing Module | **Y** | **Y** | **Y** |
| Camera Functionality | **Y** | **Y** | **Y** |

**3.2 Forced Error Testing**

System will be tested by entering incorrect data to check that the system show appropriate errors. Some of the errors can be as follows.

**Error Condition:** Invalid Username or Password  
**Messages:** Invalid username or password

**3.3 Regression Testing**

After each module is completed regression testing will be carried out. Also after integration testing the regression testing will be carried out for the entire system.

**3.4 Configuration and Compatibility Testing**

Testing was done in Windows 7 operating system.

**4. Testing Schedule**



Testing phase will start from 10th October 2015

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Implementation | Building different modules of project | All | 5thOctober 2015 | Coding and unit testing | Working System |
| Testing | Check modules work properly | All | 10thNovember 2015 | Integration, System | Final working System |

**5. Test Cases**



The test cases for each of the testing types is mentioned.

**5.1 Test Case 1**

|  |  |
| --- | --- |
| **Test Case Title** | **Secure login** |
| **Customer Requirement/purpose of test** | Only authenticated users are allowed to enter into the system and view processes. |
| **Prerequisite** | Users must have their respective username and password(Database is assumed, placeholder feature) |
| **Test Data** | Username={Valid, Invalid, Empty}  Password={ valid, Invalid, Empty} |
| **Steps** | 1. Enter the username 2. Enter the password 3. Verify and authenticate for access to test results |
| **Expected** | Authenticated user can view defect logs and ongoing processing. |

**5.2 Test Case 2**

|  |  |
| --- | --- |
| **Test Case Title** | **Report High Defect Rates.** |
| **Customer Requirement/purpose of test** | Possible assembly line fault is reported in a timely fashion. |
| **Prerequisite** | N/A |
| **Test Data** | Over 30% of input images are faulty |
| **Steps** | 1. N/A |
| **Expected** | Report High Defect Rate. |

**5.3 Test Case 3**

|  |  |
| --- | --- |
| **Test Case Title** | **Correct Defect Reports** |
| **Customer Requirement/purpose of test** | Defect is recognized accurately for future analysis. |
| **Prerequisite** | N/A |
| **Test Data** | 1 image each of various defects |
| **Steps** | N/A |
| **Expected** | Correct defect is reported for each image |

**5.4 Test Case 4**

|  |  |
| --- | --- |
| **Test Case Title** | **Camera Function** |
| **Customer Requirement/purpose of test** | Camera is working as expected and taking proper image captures. |
| **Prerequisite** | N/A |
| **Test Data** | N/A |
| **Steps** | N/A |
| **Expected** | Camera inputs live image correctly |

**5.5 Test Case 5**

|  |  |
| --- | --- |
| **Test Case Title** | **Image Processing** |
| **Customer Requirement/purpose of test** | Images of products are getting processed and output is getting shown on the console. |
| **Prerequisite** | N/A |
| **Test Data** | N/A |
| **Steps** | N/A |
| **Expected** | Product Id is displayed on the screen |