SOFTWARE TEST DOCUMENT

High Performance Deep Learning for disaster detection

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Chapter 1

Introduction

This chapter discusses about the various strategies that will be used.Also, various test cases and features to be tested and features not to be tested are discussed.

1.1 Purpose

Software testing is a critical element of software quality assurance and represents the ultimate review of specification, design and coding.A strategy of software testing includes test design methods that when tested result in successful development of software with minimum loopholes.This is the case in both large scale and small scale products irrespective of what it's economic price is.Testing is done after planning in advance.The main aim is to increase the quality of the software .

Chapter 2

Test approach

The testing engineering process can be viewed as a waterfall model.First, System engineers define the role of software and leads to software requirement analysis where information domain, function, behaviour, performance, constraints and validation criteria of the particular software is decided. Then moving on,as the waterfall model shows one module is designed and before moving to the next module the first module that is already designed is tested fully.

2.1 Unit Testing

Unit testing focuses verification effort on the smallest unit of software design,the module. The unit testing we have is white box oriented.Some of the methods are given below.Since the units haven't been developed yet, the testing methods and types can change according to the algorithms taken in question.Below are some basic types which will be used at least while coding for the units.

2.1.0.1 White Box Testing

1. This type of testing ensures that all the independent paths have been exercised at least once.
2. All logical decisions have been exercised on their true and false sides.
3. All internal data structures have been exercised to assure their validity.

To follow the concept of white box testing , we will test that each image is accepted and segmented and that it is free from noise.

2.1.0.2 Basic Path Testing

This is a white box testing method, It is established that Basis path testing method analyses the flow graph of a program and uses cyclomatic complexity to determine the number of linerly independent paths and then generated test cases for each path. We determine the cyclomatic complexity of the resultant flowgraph using the formula .

2.1.0.3 Testing Conditions

In this part, of the testing each of the conditions were tested to both true and false aspects.And all the resultant paths were tested.So that each path that may be generated on particular condition is traced to uncover any possible errors.In this project, it is tested about the input remote sensing images.

2.1.0.4 Data Flow Testing

This type of testing selects the path of the program according to the location of definition and use of variables.This kind of testing was used only when some local variable was declared.The definition use chain method was used in this type of testing These are particularly useful in nested statements.

2.1.0.5 Loop Testing

in this type of testing, all the loops are tested to all the limits.The following exercise was adopted for the loops.

1. All the loops were tested at their limits , just above them and just below them.
2. All loops were skipped at least once.
3. For nested loops, test the innermost loop first and then work outwards.
4. for concatenated loops, the values of dependent loops were set with the help of the connected loop.
5. Unstructured loops were resolved into nested loops or concatenated loops and tested as above.

Each unit will be going through the above mentioned methods separately and the input date which is in the form of images will have to be validated.

2.2 Test Case Description

2.2.1 Test 1: Feature Extraction

If the segmentation runs correctly, then only feature extraction will work.If the features are compared and matched,then only the segmentation and feature extraction is a success.

2.2.2 Test 2: Classification

The output is compared to a known output and matched whether it detected correctly or not.Here,this may also consist of many other test cases,but they will be recognised later.

2.2.3 Test 3: Images

Test whether the images are correctly loaded or not.this is very important because these are remote sensing images.i.e satellite images.They have high resolution and many other features.They have to be correctly read by the system.