

Testing Reports

Revision History:

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1. Introduction

1.1. Intended Audience and Purpose

This document provides the testing method and results, corresponding to the requirement from the customer. It consists of 3 parts, the testing cases, the test plan, and the testing results.

1.2 How to use the document

You may refer to the content section for the structure of the document, in which Sec. Testing Cases collect the unit and module test information from each team; Sec. Testing Plan shows the steps and expected results of the integration test; Sec. Results describes the real world data out of the test, and the correspondence to the requirements.

2. Testing Cases

In this section, my team propose our testing cases on unit and module testing.

2.1. Algorithm for Edge Detection

We will process the pictures which were given to us and try to detect their edges.

Test Case No.	Description	Input	Desired output
0001	Input a photo that doesn't meet the format and size requirements	A low quality photo	The algorithm returns an error message that the input doesn't meet the requirements.
0002	Input a correct X-ray photo	A correct X-ray photo	The algorithm returns a photo which has a curve fitting the bones on it.
0003	Test the accuracy of Edge Detection	A correct X-ray photo	The curve returned by the algorithm which fitting the bones should be very close to the curve formed by the bones.

2.2. Algorithm for the Degree of the Cobb

We will process the pictures which were given to us and try to calculate their degrees of the Cobb.

Test Case No.	Description	Input	Desired output
0004	Input a photo that doesn't meet the format and size requirements	A low quality photo	The algorithm returns an error message that the input doesn't meet the requirements.
0005	Input a correct X-ray photo	A correct X-ray photo	The algorithm returns a photo which has a Cobb angel drawn on it and outputs its degree.
0006	Test the accuracy of calculating the degree of the Cobb	A correct X-ray photo	The degree of the Cobb returned by the algorithm should be very close to the degree calculated by the doctor.

2.3. Algorithm for Lenke Classification

We will process the pictures which were given to us and try to classify them into subtypes of Lenke classification based on the factors influencing the shoulder balance including the upper thoracic curve, the balance between the curves and the Cobb angle of the main curve.

Test Case No.	Description	Input	Desired output
0007	Input a photo that doesn't meet the format and size requirements	A low quality photo	The algorithm returns an error message that the input doesn't meet the requirements.
0008	Input a correct X-ray photo	A correct X-ray photo	The algorithm returns a photo which has a Cobb angel drawn on it and outputs its degree and its Lenke classification.

0009	Test the accuracy of calculating the Lenke classification	A correct X-ray photo	The subtype of the Lenke classification returned by the algorithm should be very close to the subtype determined by the doctor.
0010	Test the running speed of the algorithm	50 correct X-ray photos	Running time of the algorithm.

3. Testing Plan

Here comes the complete testing plan for integration, referring to the workflows in the system design document.

3.1. Upload Pictures

The pictures which will be processed will be uploaded by the Server Team.

3.2. Process Pictures

The pictures will be processed, and the Cobb Degree will be obtained.

3.3. Give Advice

The advice will be given according to the Cobb Degree.

4. Testing Results

The results of the integration are listed here and you may find the correspondence to the requirements in the requirement analysis document.

Test Case No.	Module	Result	Corresponding Requirement
0001	Algorithm for Edge Detection	Pass	The algorithm returns an error message that the input doesn't meet the requirements.
0002	Algorithm for Edge Detection	Pass	The curve returned by the algorithm which fitting the bones should be very close to the curve formed by the bones.
0003	Algorithm for Edge Detection	The bone recognition effect of the upper thoracic vertebrae segment is not	The curve returned by the algorithm which fitting the bones should be very close to the

		ideal, and the bone recognition effect of other segments is significant.	curve formed by the bones.
0004	Algorithm for the Degree of the Cobb	Pass	The algorithm returns an error message that the input doesn't meet the requirements.
0005	Algorithm for the Degree of the Cobb	Pass	The algorithm returns a photo which has a Cobb angel drawn on it and outputs its degree.
0006	Algorithm for the Degree of the Cobb	The test found that all errors will not exceed 10 degrees, and that more than 85% of the errors will not exceed 5 degrees.	The degree of the Cobb returned by the algorithm should be very close to the degree calculated by the doctor.
0007	Algorithm for Lenke Classification	Pass	The algorithm returns an error message that the input doesn't meet the requirements.
0008	Algorithm for Lenke Classification	Pass	The algorithm returns a photo which has a Cobb angel drawn on it and outputs its degree and its Lenke classification.
0009	Algorithm for Lenke Classification	If the error of the Cobb angle is within 5 degrees, the lenke classification is basically correct, and the accuracy of the lenke classification needs to be	The subtype of the Lenke classification returned by the algorithm should be very close to the subtype determined by the doctor.

		improved by improving the measurement accuracy of the Cobb angle.	
0010	Algorithm for Lenke Classification	An average of 6 seconds per picture	Running time of the algorithm.