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Testing and Validation Report

Your Name

January 24, 2025

Contents

1 Introduction

This document outlines the testing and validation process for the project [**Project Name**]. It includes test objectives, methods, results, and conclusions.

1.1 Purpose

The purpose of this testing is to verify that the system meets the specified requirements and functions as intended.

2 Test Plan

2.1 Test Environment

The testing was conducted in the following environment:

- Operating System: Ubuntu 22.04
- Hardware: Intel Core i7, 16GB RAM
- Tools: Python 3.10, Jupyter Notebook
- LaTeX: TeX Live 2023

2.2 Test Cases

The table below lists the test cases:

Test ID	**Description**	**Expected Result**
TC001	Validate input file format	File is successfully parsed
TC002	Verify calculation accuracy	Results match theoretical values
TC003	Check output file generation	File is saved in the correct location

Table 1: Test Cases

3 Test Methods

3.1 Input Validation

Inputs were tested with valid, invalid, and edge cases to ensure proper handling. For example:

[language=Python, caption=Input Validation Code] def validate$_input(file_path)$: $if not file_path.endswith('.csv') : raiseValueError("Invalid file format. Expected .csv")$

3.2 Output Verification

The results were compared against known baselines to validate accuracy.

4 Results

4.1 Test Results Summary

The following results were obtained:

- Total Tests: 10
- Passed: 8
- Failed: 2

4.2 Failed Test Analysis

For test case TC002, the calculation mismatch was due to incorrect rounding. The expected result was 3.14, but the output was 3.14159.

4.3 Figures

Figure 1 shows the comparison graph between expected and actual values.

Figure 1: Comparison of Expected vs Actual Values

5 Conclusion

The testing and validation process identified minor issues that need resolution, but the overall system performs as expected.

A Appendix

A.1 Code Snippets

Below is the Python code used for testing:

[language=Python, caption=Sample Python Code] import numpy as np def calculate$_a rea(radius)$: $returnnp.pi * radius * *2$