

# Reflection and Traceability Report on OCRacle

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## 1 Changes in Response to Feedback

### 1.1 SRS and Hazard Analysis

[Instructor feedback](#) was addressed in a [pull request](#). Changes include:

- Removed units from unitless symbols.
- Used symbolic constants to define the size of the input image and number of classification classes.
- Introduced name of program in Introduction.
- Added specific coursework necessary for intended reader to understand the document.
- Removed irrelevant technical user responsibilities.
- Clarified user characteristics.
- Removed system constraints.
- Defined all symbols used in the document.
- Clarified confusing sentence in Cross-Entropy Loss Function description.
- Added more specific for usability requirements.
- Revised maintainability requirements.
- Revised rationale to explain why the dataset was chosen.
- Fixed references for Theoretical Models.
- Clarified R2 to explain how the input image would be processed for classification.
- Split functional requirements into Training and Prediction.

The following peer review feedback was addressed:

- [Suggestions for the Model](#): Issue closed for being out of scope for the project.

- [Defining Accuracy](#): Explicit accuracy calculation was added to the documentation.
- [Assumptions and FRs](#): Issue closed for not being a concern brought up by the instructor.
- [SRS Minor Details](#): Addressed minor details pointed out by the reviewer.

## 1.2 Design and Design Documentation

[Instructor feedback](#) was addressed in a [pull request](#). Changes include:

- MG: Update to the Uses Hierarchy to accurately reflect the architecture of the program.
- MIS: Starting all modules on a new page.
- MIS: Removing names from outputs.
- MIS: Fixing the environment variable for the Input Format Module.
- MIS: Added footnote to explain why the Input Format Module and Image Preprocessing Module are separate.
- MIS: Defined notation used to describe matrices.
- MIS: Changed LABEL from a set to a list to reflect the behavior of the program.
- MIS: Removed local functions from Image Preprocessing Module.
- MIS: Added GUI sketches to define the Graphical User Interface Module.

The following peer review feedback was addressed:

- [Labels Sharing Confidence](#): The behavior of the argmax function was defined.
- [Clearer Control](#): The MG and MIS documents were updated to reflect how the Application Module interacts with the other modules.
- [Bicubic Interpolation Exceptions](#): Issue was closed for being out of scope, since computational errors in bicubic interpolation are not a concern for the project.
- [Validating Input Value](#): The behavior of the normalization function was clarified to show how the program would avoid divide-by-zero errors.
- [Centralized Config File](#): Issue was closed for being out of scope, though it was a great suggestion.

- [Decoupling Optimizer and Training](#): Issue was closed since ADAM optimization and the training routine are too tightly coupled to be separated.
- [Normalization Consistency](#): MIS document was corrected to correspond with the normalization behavior defined in the SRS.

### 1.3 VnV Plan and Report

[Instructor feedback](#) was addressed in a [pull request](#). Changes include:

- Changed citation format from "cite" to "citep" in LaTeX.
- Gave a greater number of citations to existing documentation, including the MG and MIS.
- Added more detailed methods for code walkthroughs.
- Gave more explicit expectations of inputs where a single uppercase Latin alphabet character is expected.
- Defined the dataset to be used during testing.
- Clarified why the sum of the probability vector is equal to 1.
- Clarified T8 to define how the test would be automated.
- Clarified T10 in terms of expected test users and tasks.
- Clarified T13 in terms of what tests would be run to verify cross-platform compatibility.
- Added queries used for ChatGPT table generation.

The following peer review feedback was addressed:

- [Comparison with OAR](#): The accuracy metrics used to compare the OCRacle project to OAR have been defined.
- [Docker Config Details](#): Issue was closed since Docker was no longer being used for the project.
- [Evaluating Command Line Skills](#): The MIT Missing Semester was added as the baseline knowledge of "basic command line skills."
- [PyTest in the Python Stlib?](#): PyTest is not included in the Python standard library, so this mention was removed.
- [Specifying Known Correct Outputs](#): Clarified what the known correct outputs would be for T4 and T9.

## **2 Challenge Level and Extras**

### **2.1 Challenge Level**

The challenge level of this project is considered to be general.

### **2.2 Extras**

The extra for this project was a video code walkthrough. The code walkthrough explained the purpose of each module, briefly ran through the code, and detailed how each component contributes to the overall functionality of the program.