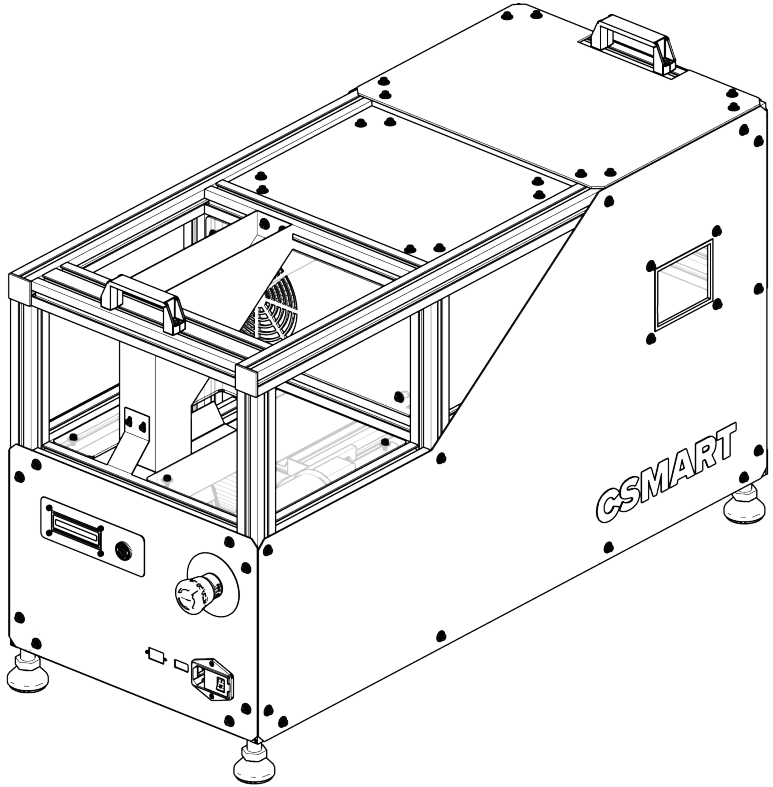


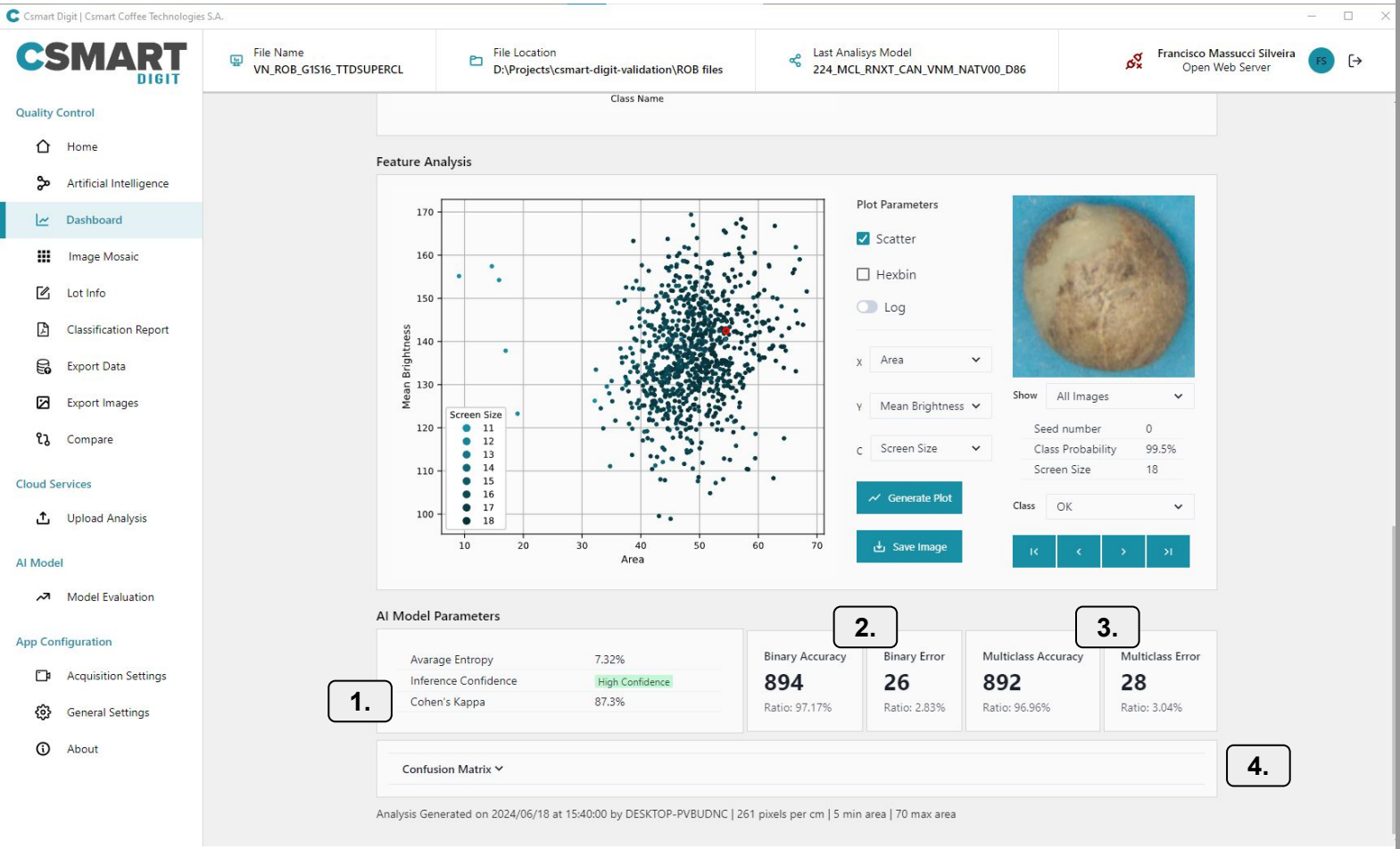
New Release

Device Control Desktop App

Minor version - V3.0.12

2024/08/16

CSMART DIGIT

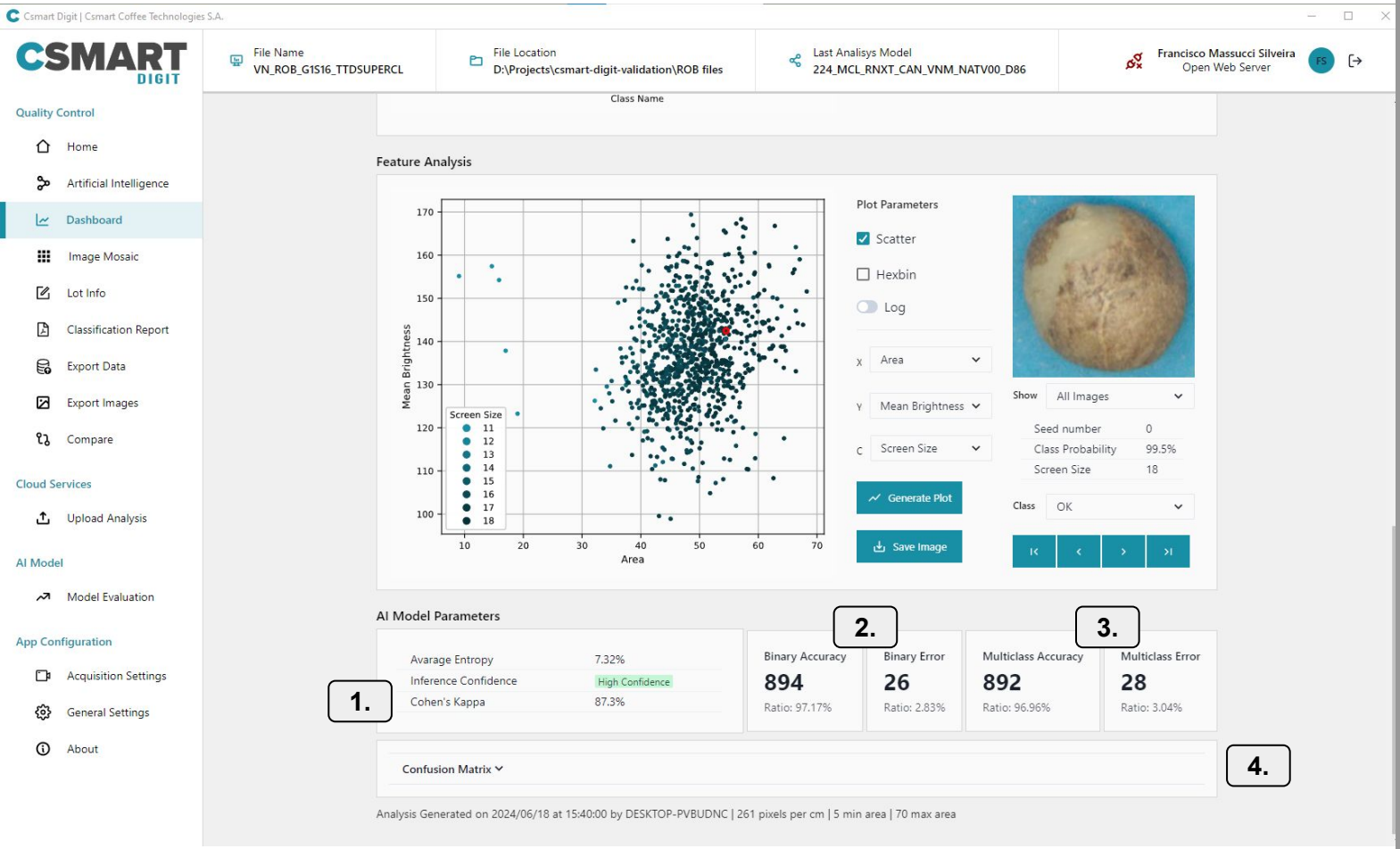


Dashboard

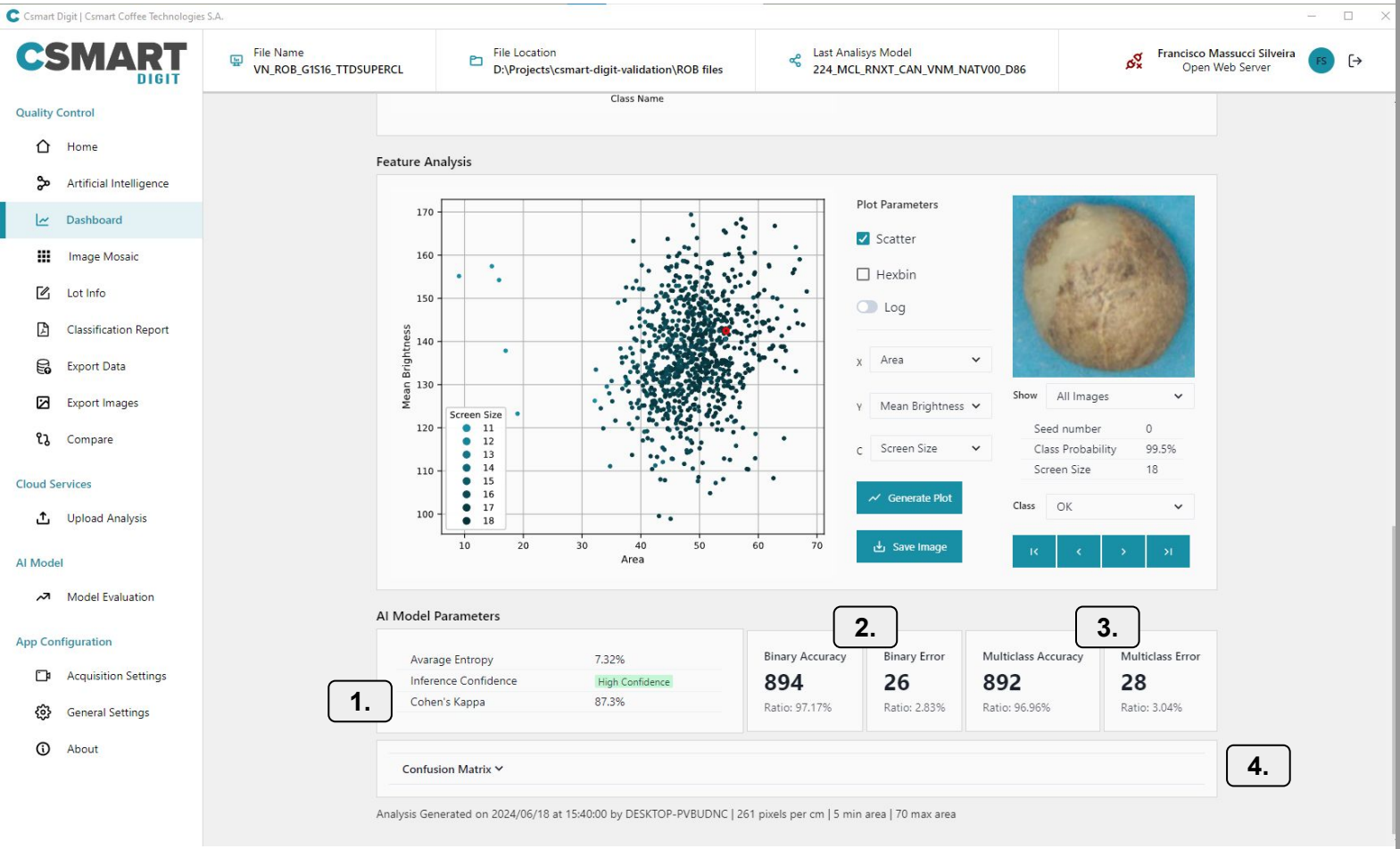
1. **AI Model Parameters** now presents more features:

Cohen's Kappa coefficient measures how well two systems agree when classifying things—in this case, the AI model and Human Analysis (ground truth). It also considers that some agreements might happen by chance. A score near 0 indicates total disagreement, while 100% shows the AI model's predictions are perfectly aligned with human judgment. This metric becomes relevant after the user has adjusted the classification of images in the image mosaic.

Dashboard



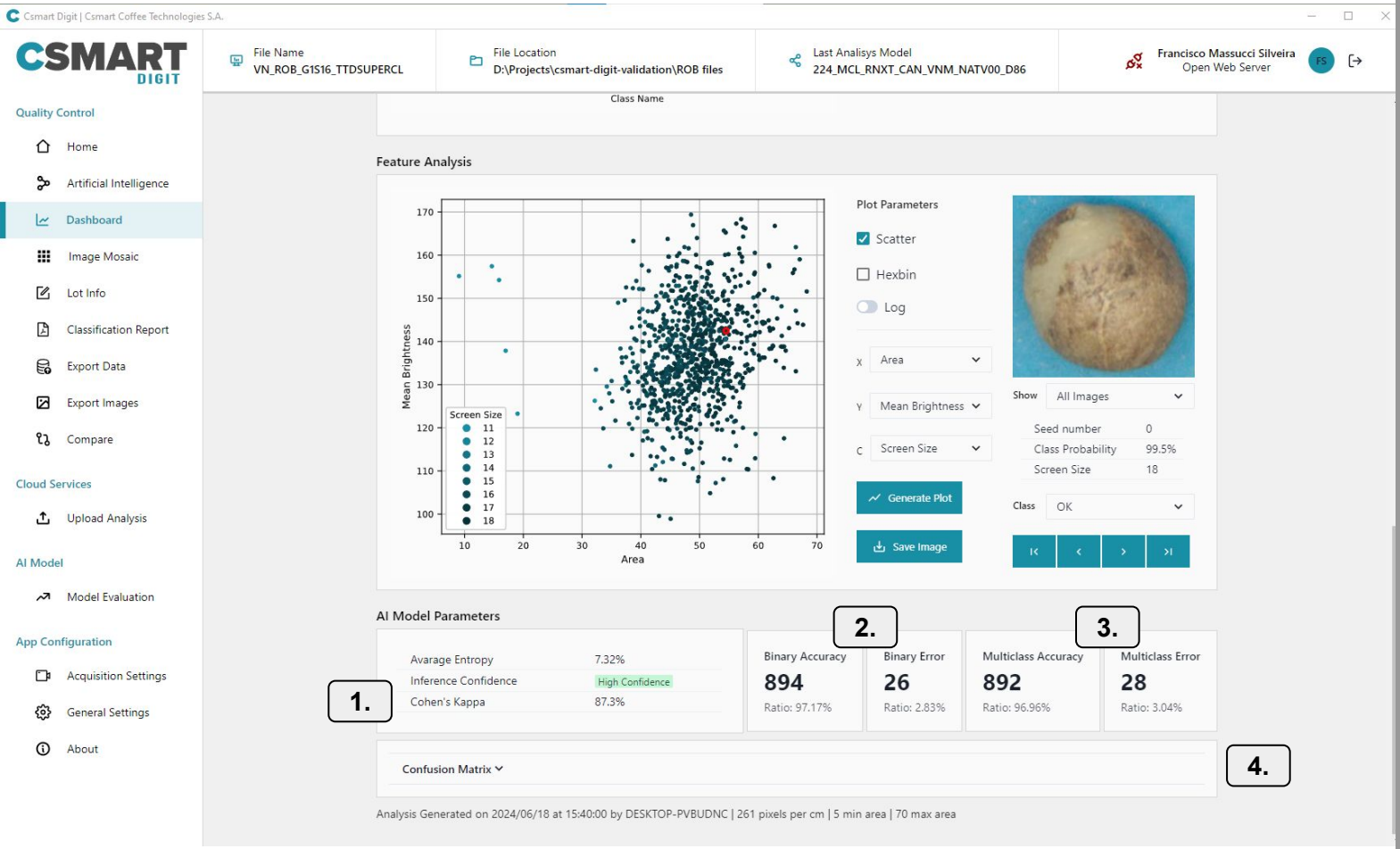
2. **Binary Accuracy and Binary Error** measures are used to evaluate the performance of an AI model when differentiating between good coffee and defective coffee. Binary Accuracy calculates the percentage of correct predictions for defective classes out of all predictions, while Binary Error represents the percentage of incorrect predictions. These metrics are crucial for understanding how well the model distinguishes between good and defective coffees, disregarding errors within these subsets.



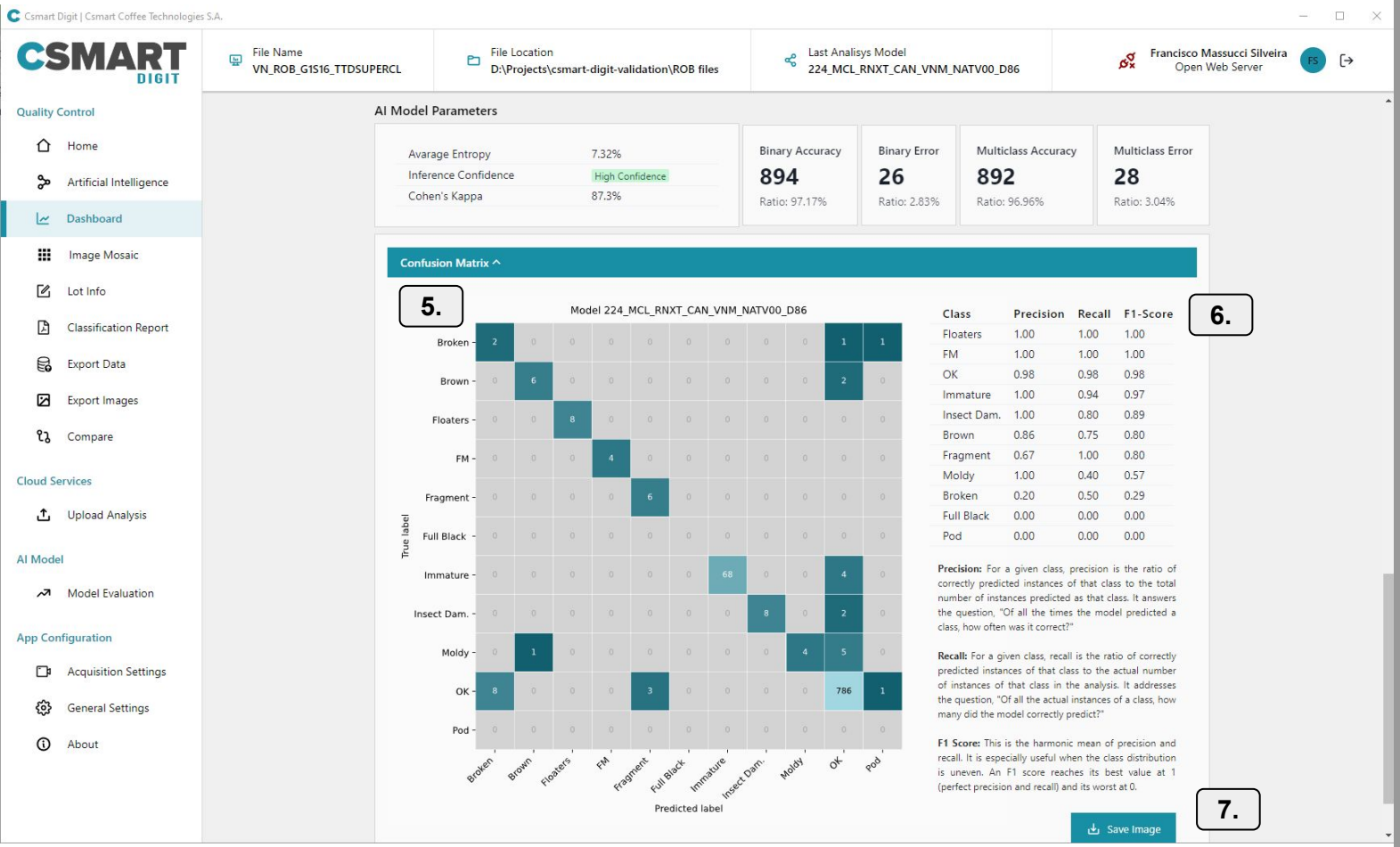
Dashboard

3. **Multiclass Accuracy and Error** are used to evaluate the performance of an AI model when differentiating between all classes present in the model. Multiclass Accuracy calculates the percentage of correct predictions for each class out of all predictions, while Multiclass Error represents the percentage of incorrect predictions across these classes. These metrics are essential for understanding how well the model distinguishes between various classes and assessing the overall model error.

Dashboard



4. Click on **Confusion Matrix** button to open this metric. A confusion matrix is a table used to define the performance of a classification algorithm. A confusion matrix visualizes and summarizes the performance of a classification algorithm by presenting the predicted label on the X-axis and the true label (images that have been adjusted by the user) on the Y-axis. This metric is only relevant if the user changed image classes in the image mosaic.

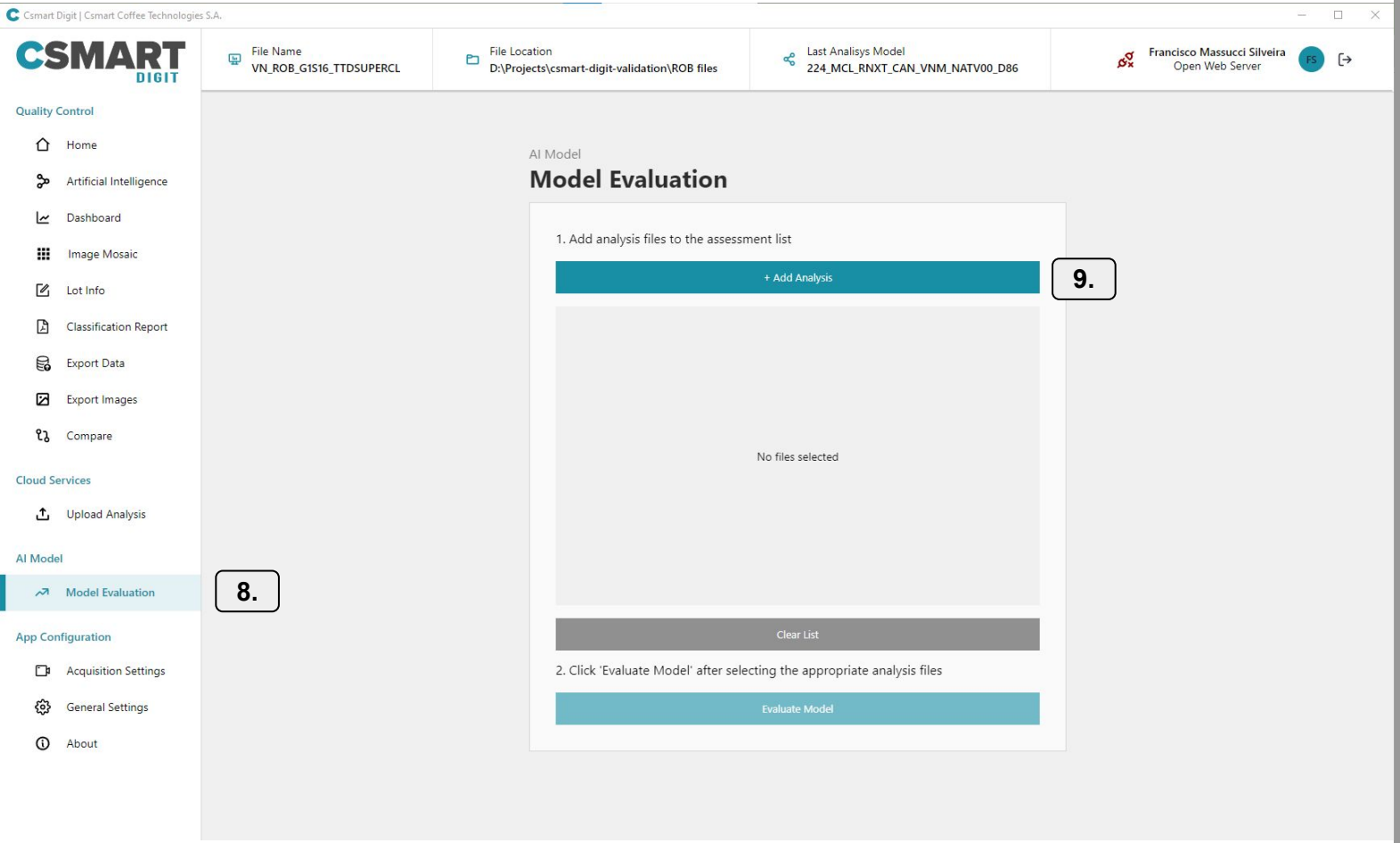


Dashboard

5. Results in the diagonal represent correct predictions, as the predicted label is equal to the True Label. Every other occurrence represent where and how the model error during prediction.

6. A table with the Classes name, Precision, Recall and F1-Score is presented for each class. The definition of these metrics area presented in the text below the table.

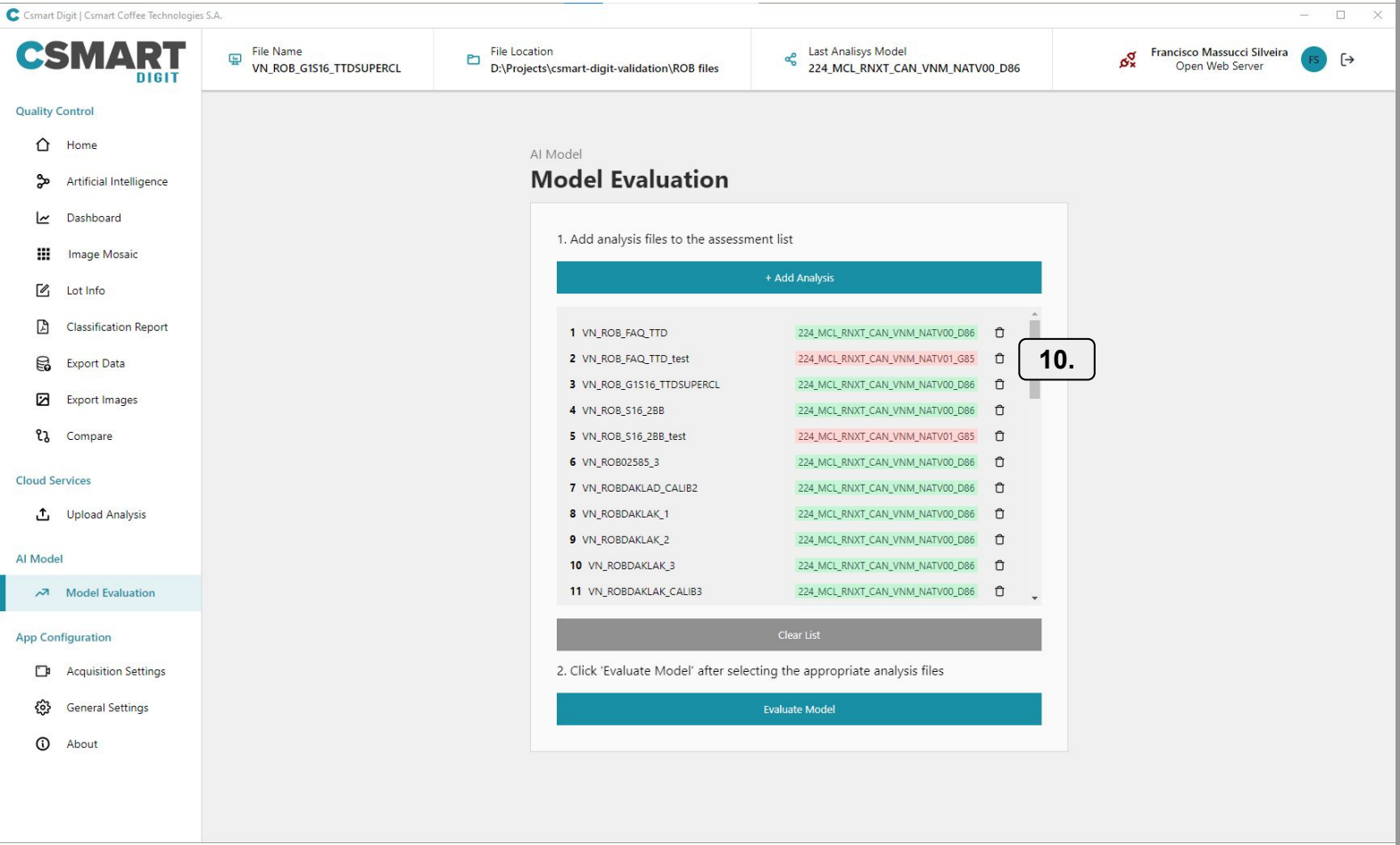
7. The **Save Image button** is intended to save the confusion matrix in .jpg format



Dashboard

8. A new section in the side menu named **Model Evaluation** aims to evaluate the performance of a specific AI model after promoting and demoting classes from different analyses, using the Image Mosaic tool. To access this feature, click on Model Evaluation

9. Click in **+Add Analysis** and select the files that have been adjusted for image classification.

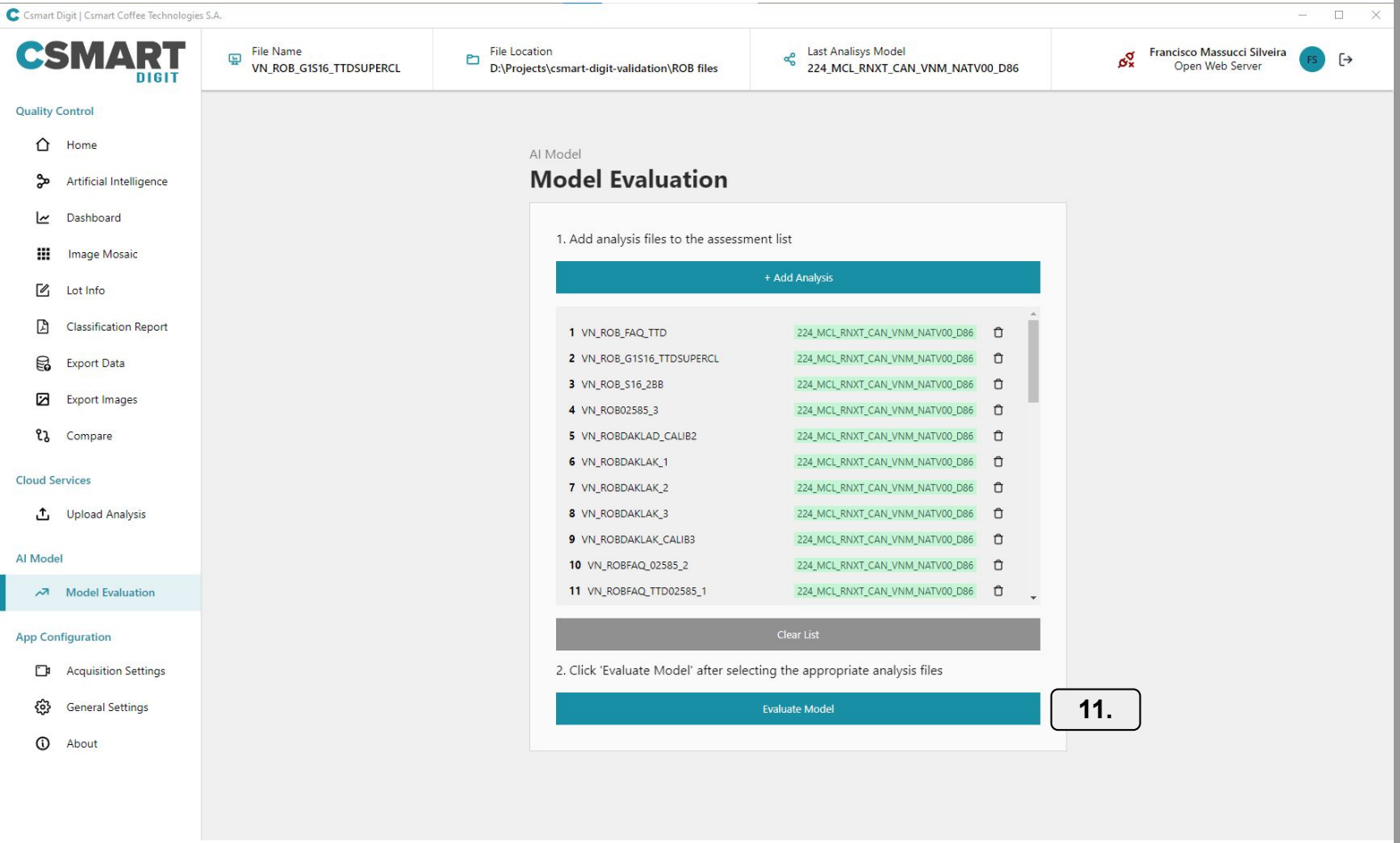


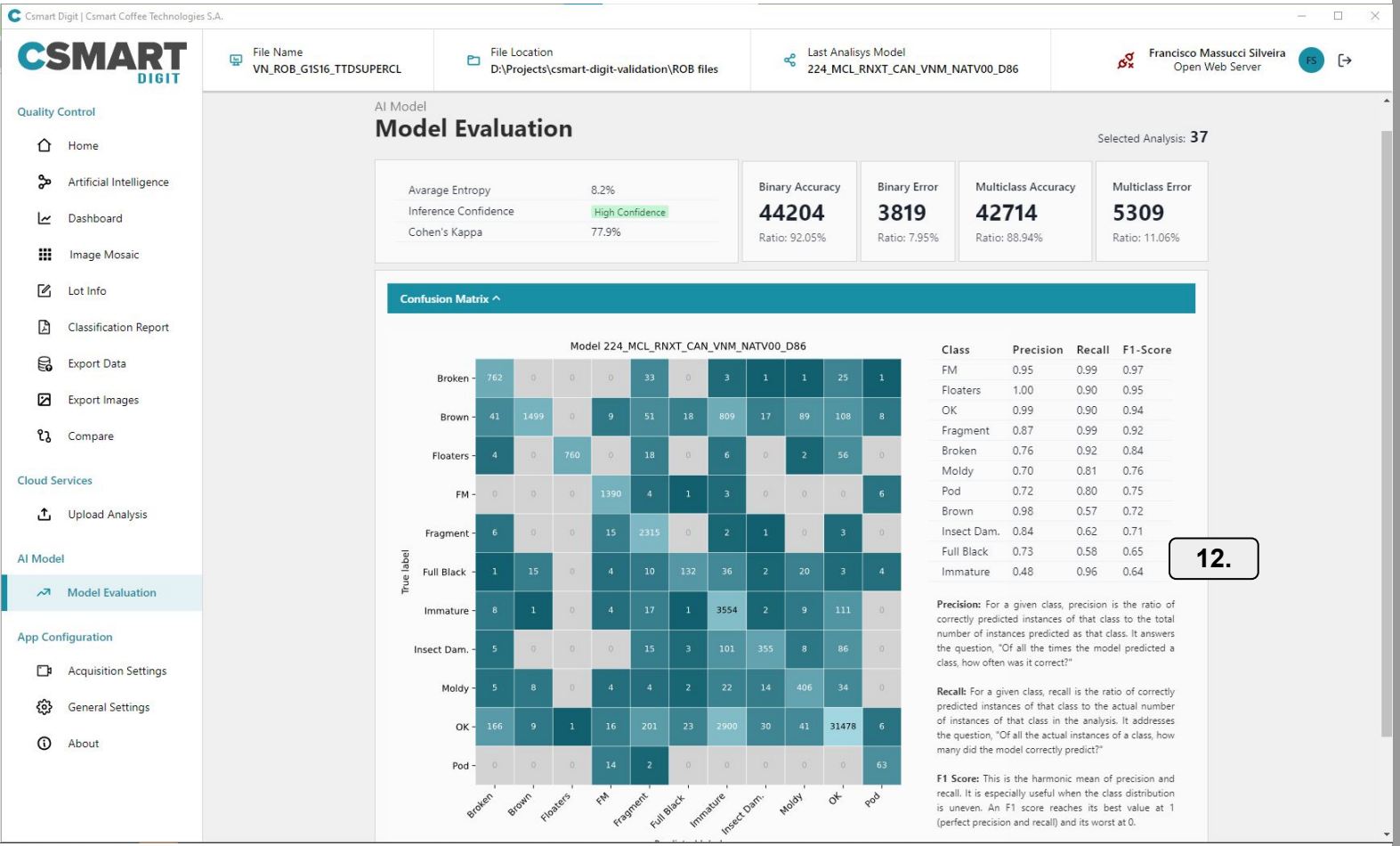
Dashboard

10. Make sure only files that were analyzed with the same AI model are selected in the list. Remove those that are not.

Dashboard

11. Click in **Evaluate Model** button to generate the evaluation





Dashboard

12. Similar to the resources present in the dashboard for a single file, this tool concatenates the reading for multiple files, presenting a thorough evaluation of the selected Model, its accuracy and ability to generalize to new data. It is important to note that the table presents, from top to bottom, the most accurate class predictions, thus indicating classes at the bottom that require more images to increase the model's performance.

CSMART

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