Computer Vision: Use Case Walkthrough

What is the first step of AI project cycle?

Step-1 Problem scoping

- Coral bleaching happens when corals lose their vibrant colors and turn white.
- But there's a lot more to it than that. The leading cause of coral bleaching is climate change.
- Coral bleaching matters because once these corals die, reefs rarely come back.
- With few corals surviving, they struggle to reproduce, and entire reef ecosystems, on which people and wildlife depend, deteriorate.
- Detecting bleaching of coral reefs at an early stage can prevent the world from disasters.

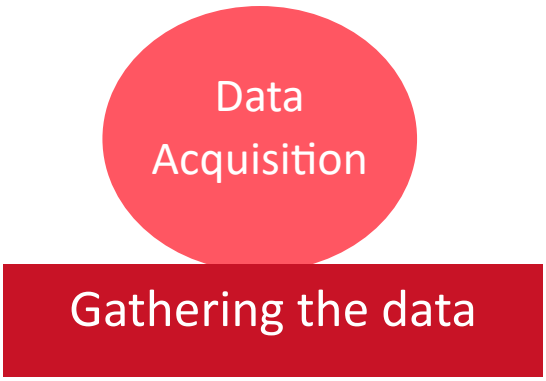
Discussions

1. Do you think such projects help you inculcate awareness about global problems and think about building solutions to overcome them?
2. Coral Bleaching will fall under which SDG? Give your comments

What comes after Problem Scoping?

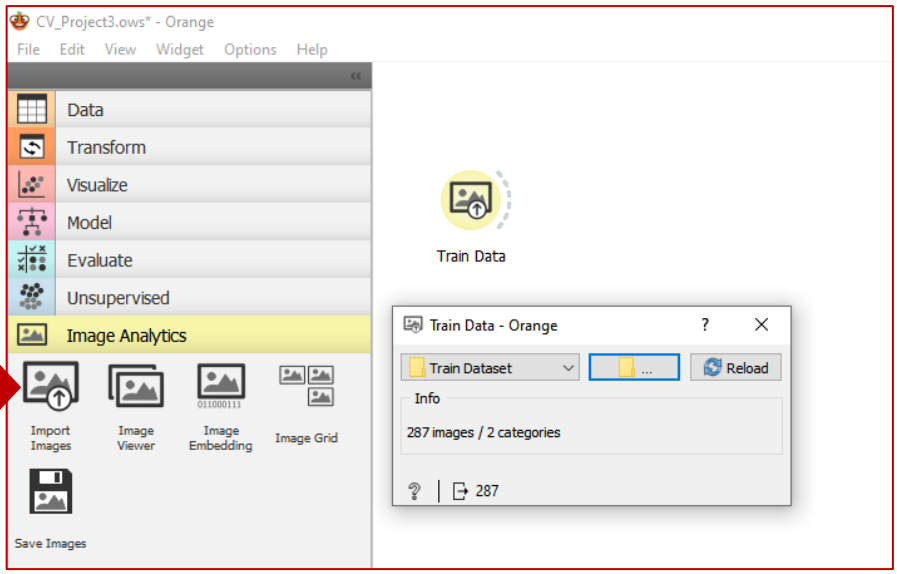
Step-2 Data Acquisition

- This dataset was created for the research and experimental purposes of a manuscript titled "Bag of Features (BoF) Based Deep Learning Framework for Bleached Corals Detection".



Step 2: Upload Dataset

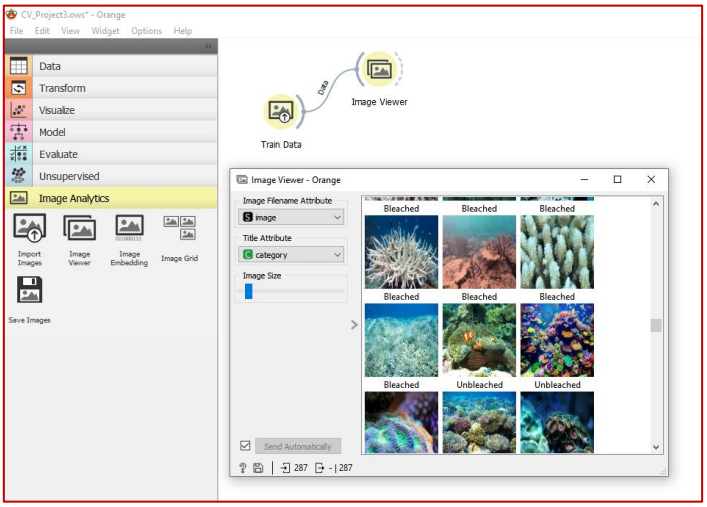
1. Click on Import Image
2. Rename Import Image to Train Data
3. Double-click on the Train Data icon and select the directory containing the training dataset
4. 2 categories indicate the 2 classes(Bleached and Unbleached)



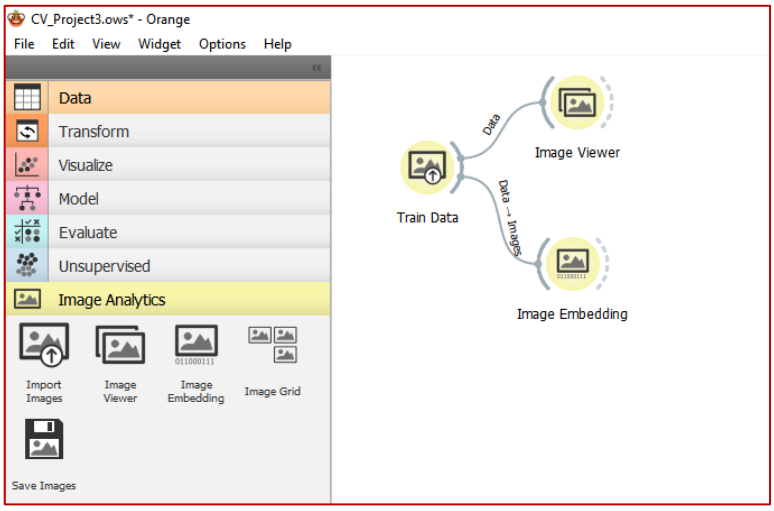
What is the next step after Data Acquisition?

Step 3: Explore Dataset

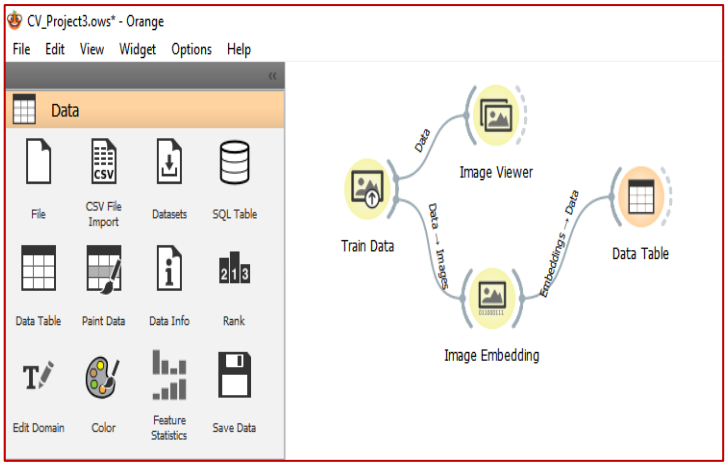
1. Click on Image Viewer
2. Double-click on Image Viewer to view the dataset through the application



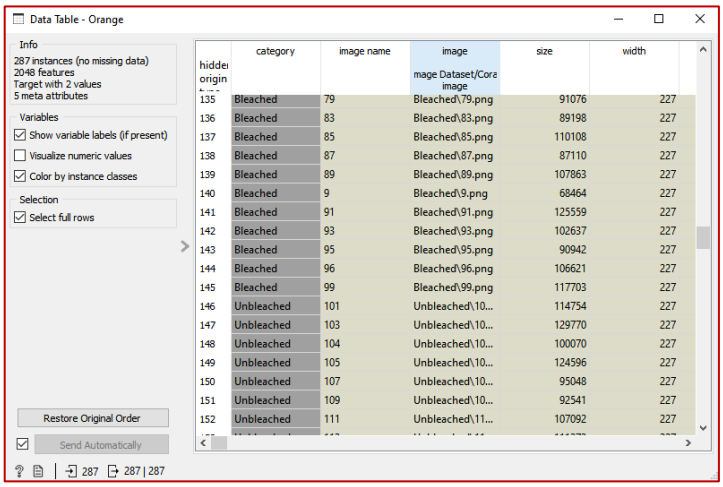
3. Click on Image Embedding
4. Connect Train Data with Image Embedding



5. Click on Data Table
6. Connect Image Embedding with Data Table

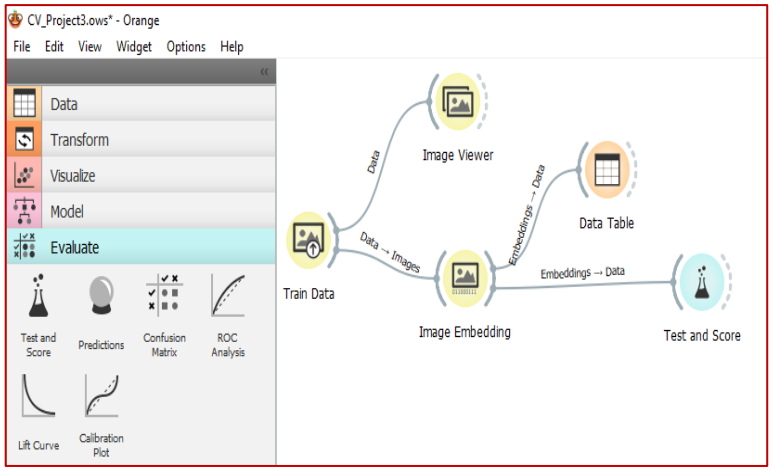


7. Double-click on Data Table to view the details

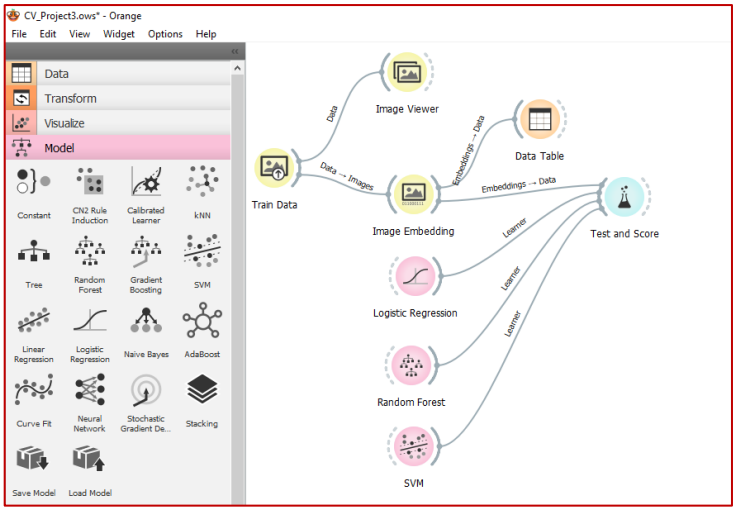


What is the next step after Data Exploration?
Step 4: Build Model

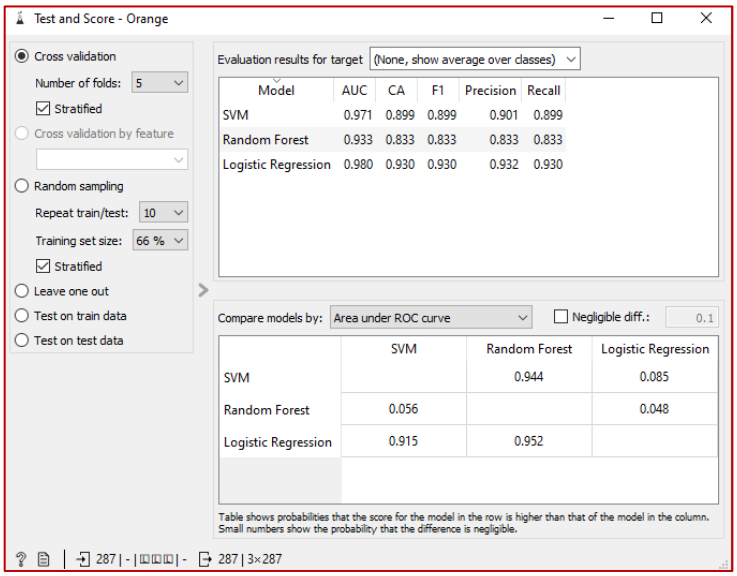
1. Click on Test and Score
2. Connect Image Embedding with Test and Score



3. Select different algorithms for classification like-
    - Logistic Regression
    - Random Forest
    - SVM
4. Connect these 3 algorithms to Test and Score to check which performs better

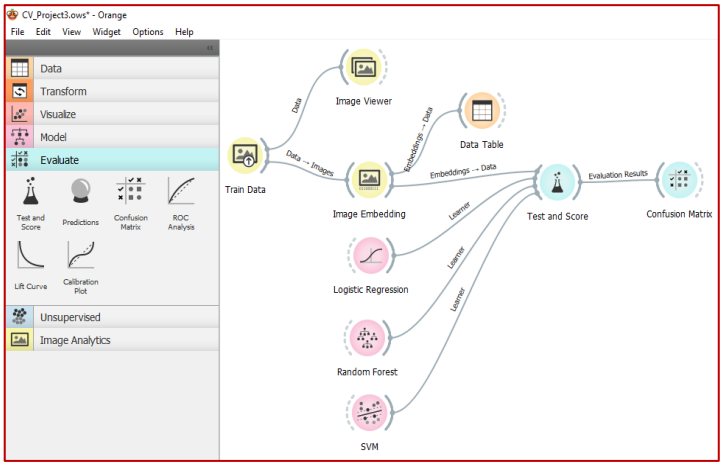


5. Double-click on Test and Score to view the evaluation metric like Accuracy, F1 Score, Precision, and Recall for all 3 algorithms
6. Logistic Regression gives the best accuracy in this case

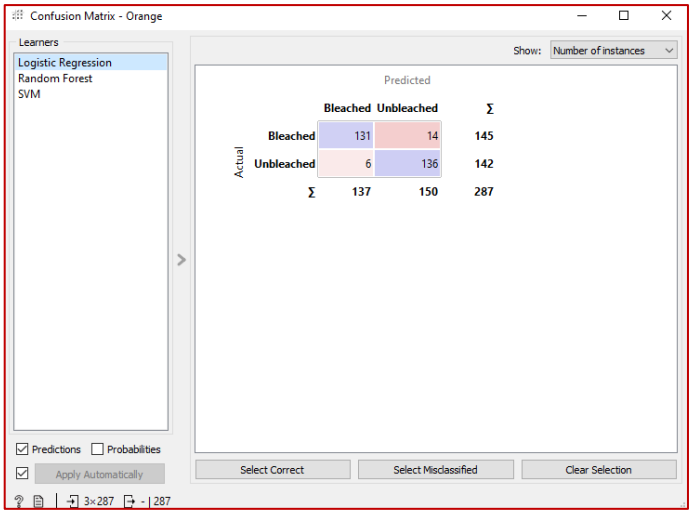


After model building, next step is?
Step 5: Evaluate Model

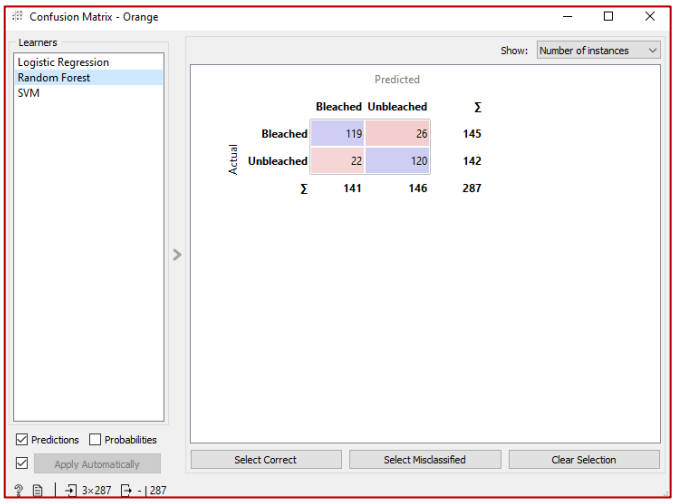
1. Click on Confusion Matrix
2. Connect Test and Score to Confusion Matrix
3. Double-click on Confusion Matrix to view the distribution of correct and incorrect predictions.



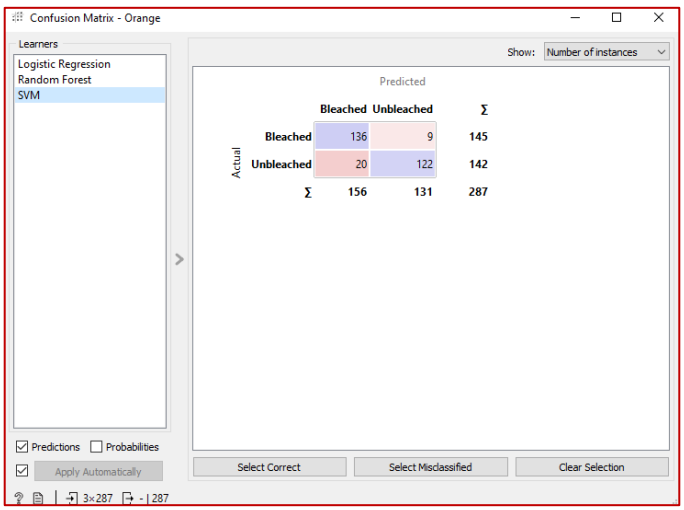
4. Shows the correct and incorrect predictions based on Logistic Regression



5. Shows the correct and incorrect predictions based on Random Forest Algorithm

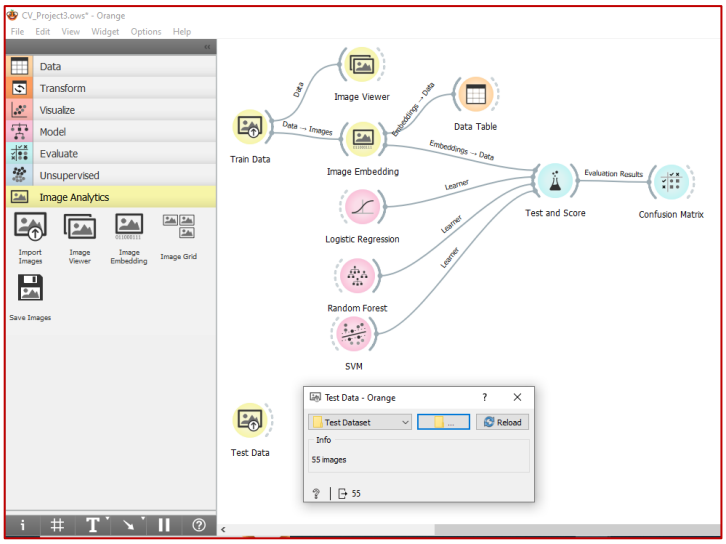


6. Shows the correct and incorrect predictions based on SVM Algorithm

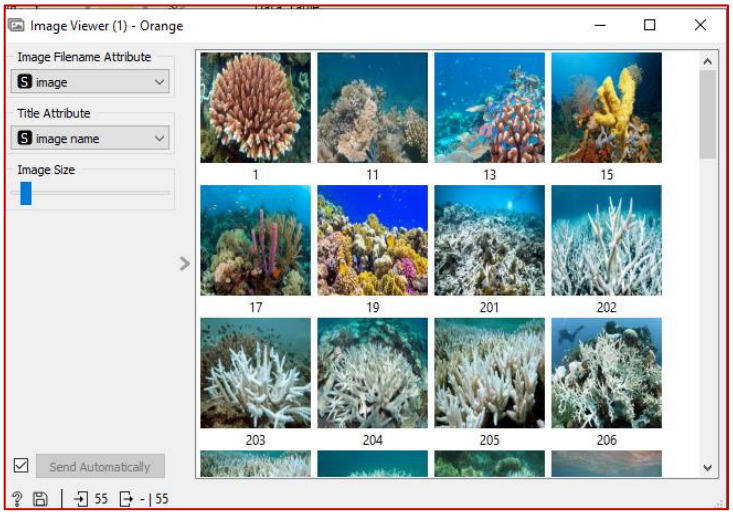


Step 6: Prediction

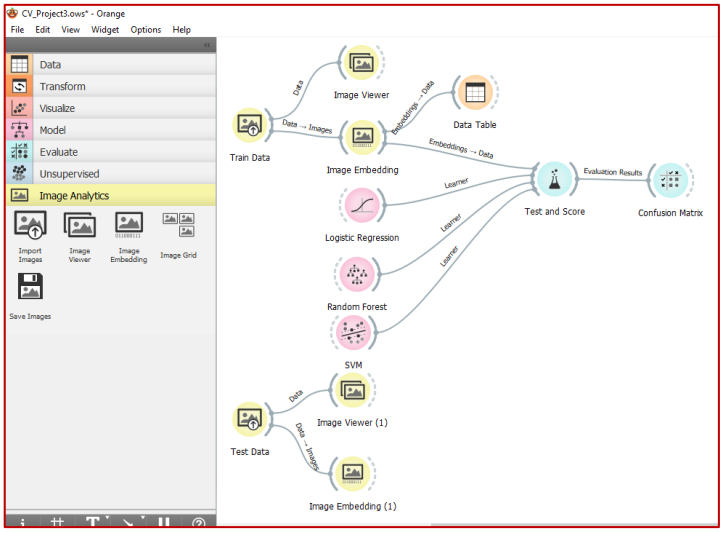
1. Click on Import Image
2. Right-click and rename it to Test Data
3. Double-click and select the directory containing Training Dataset



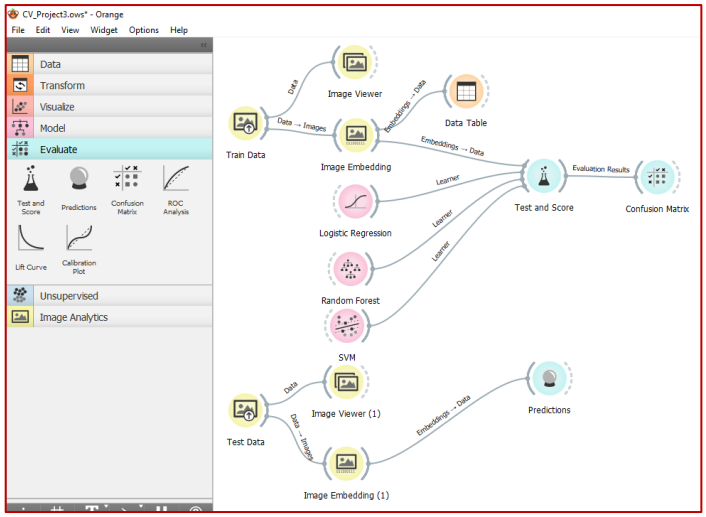
4. Image Viewer shows the test dataset



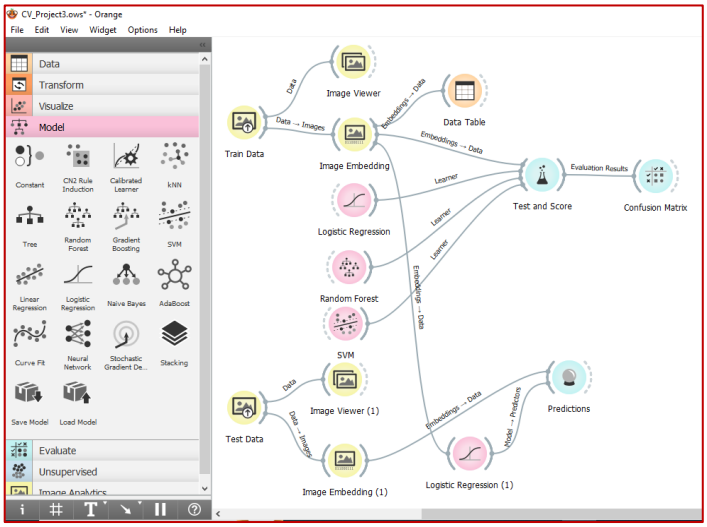
5. Click on Image Embedding
6. Connect Test Data to Image Embedding



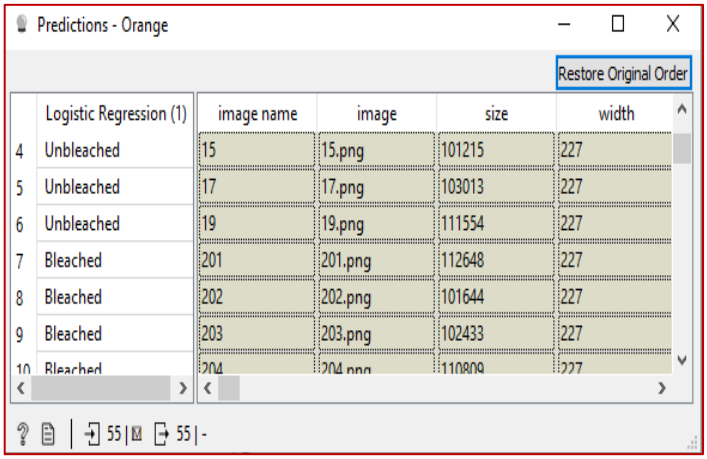
7. Click on Predictions
8. Connect Image Embedding to Predictions



9. Click on Logistic Regression
10. Connect Logistic Regression to Predictions
11. Connect Image Embedding(of train data) to Logistic Regression



12. This table shows the prediction of test data based on Logistic Regression



Predictions - Orange

Restore Original Order

	Logistic Regression (1)	image name	image	size	width
4	Unbleached	15	15.png	101215	227
5	Unbleached	17	17.png	103013	227
6	Unbleached	19	19.png	111554	227
7	Bleached	201	201.png	112648	227
8	Bleached	202	202.png	101644	227
9	Bleached	203	203.png	102433	227
10	Bleached	204	204.png	110809	227

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