

Nova Versão

Aplicativo desktop

Versionamento menor - V3.0.12

16/08/2024

File Name
VN_ROB_G1S16_TTDSUPERCLFile Location
D:\Projects\csmart-digit-validation\ROB filesLast Analysis Model
224_MCL_RNXT_CAN_VNM_NATV00_D86Francisco Massucci Silveira
Open Web Server

Quality Control

- Home
- Artificial Intelligence
- Dashboard**
- Image Mosaic
- Lot Info
- Classification Report
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Cloud Services

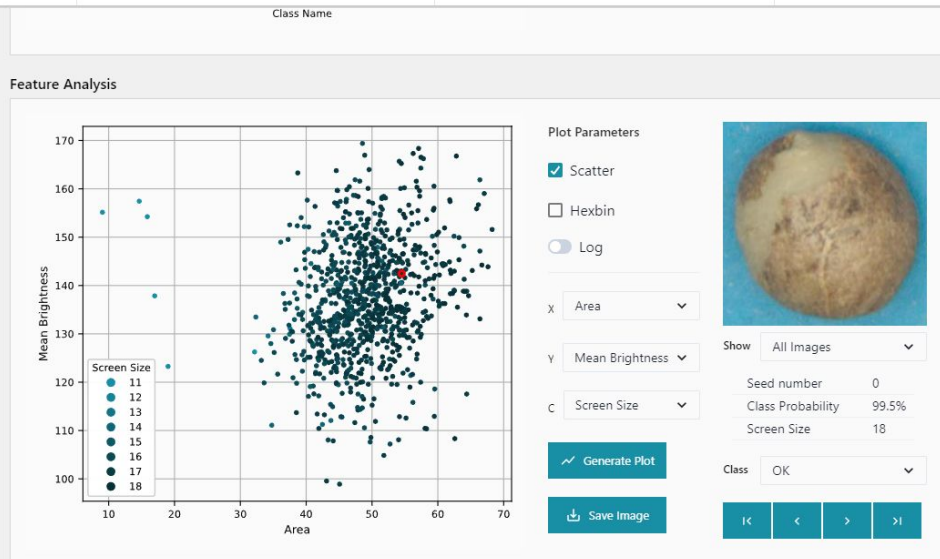
- Upload Analysis

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AI Model Parameters

Average Entropy 7.32%

Inference Confidence **High Confidence**

Cohen's Kappa 87.3%

Binary Accuracy
894
Ratio: 97.17%

Binary Error
26
Ratio: 2.83%

Multiclass Accuracy
892
Ratio: 96.96%

Multiclass Error
28
Ratio: 3.04%

Confusion Matrix

Analysis Generated on 2024/06/18 at 15:40:00 by DESKTOP-PVBUDNC | 261 pixels per cm | 5 min area | 70 max area

Dashboard

1. Parâmetros do Modelo de IA agora apresentam mais recursos:

Cohen's Kappa mede o quão bem dois sistemas concordam ao classificar — neste caso, o modelo de IA e a análise humana (verdadeiro). Este sistema considera ainda que algumas concordâncias podem ocorrer por acaso. Uma pontuação próxima de 0 indica total desacordo, enquanto 100% mostra que as previsões do modelo de IA estão perfeitamente alinhadas com o julgamento humano. Essa métrica se torna relevante após o usuário ter ajustado a classificação das imagens no mosaico de imagens.

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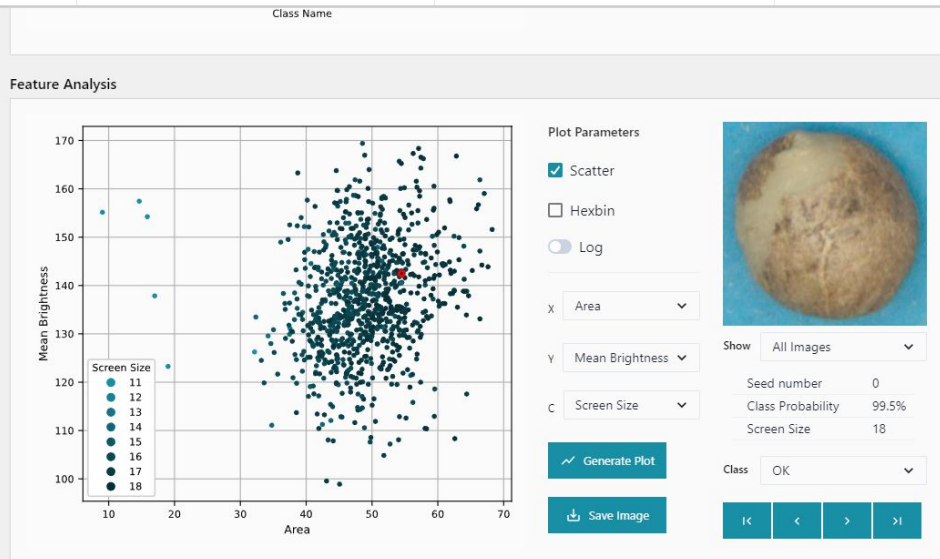
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Confusion Matrix

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2. **Binary Accuracy e Binary Error** são usadas para avaliar o desempenho de um modelo de IA ao diferenciar entre café bom e café defeituoso. A Acurácia Binária calcula a porcentagem de previsões corretas para as classes defeituosas em relação a todas as previsões, enquanto o Erro Binário representa a porcentagem de previsões incorretas. Essas métricas são cruciais para entender quão bem o modelo distingue entre cafés bons e defeituosos, desconsiderando erros dentro desses subconjuntos.

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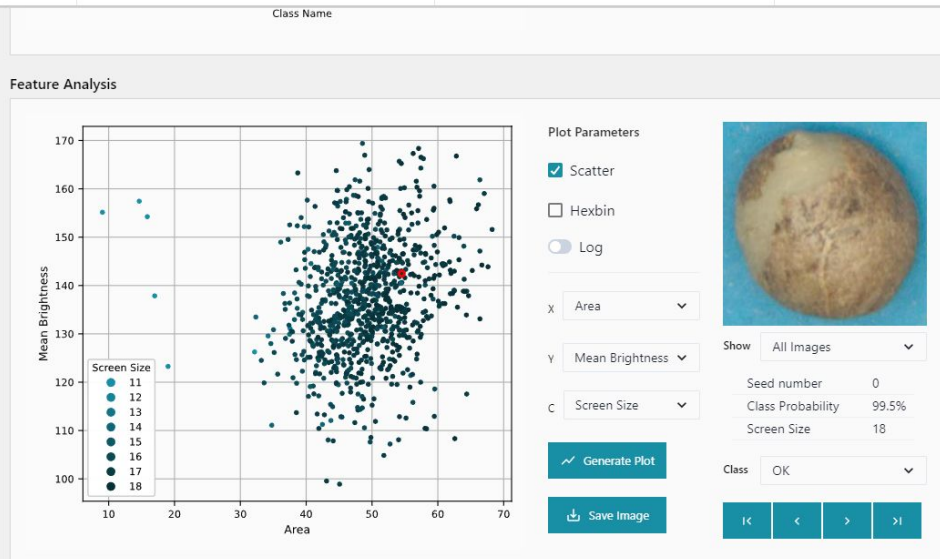
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AI Model Parameters

1.

Average Entropy	7.32%
Inference Confidence	High Confidence
Cohen's Kappa	87.3%

2.

Binary Accuracy
894
Ratio: 97.17%

3.

Binary Error
26
Ratio: 2.83%

Multiclass Accuracy
892
Ratio: 96.96%

Multiclass Error
28
Ratio: 3.04%

4.

Confusion Matrix

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3. **Multiclass Accuracy** e **Multiclass Error** são destinados a avaliar o desempenho de um modelo de IA ao diferenciar entre todas as classes presentes no modelo. **Multiclass Accuracy** calcula a porcentagem de previsões corretas para cada classe em relação a todas as previsões, enquanto o **Multiclass Error** representa a porcentagem de previsões incorretas entre essas classes. Essas métricas são essenciais para entender quão bem o modelo distingue entre várias classes e para avaliar o erro geral do modelo.

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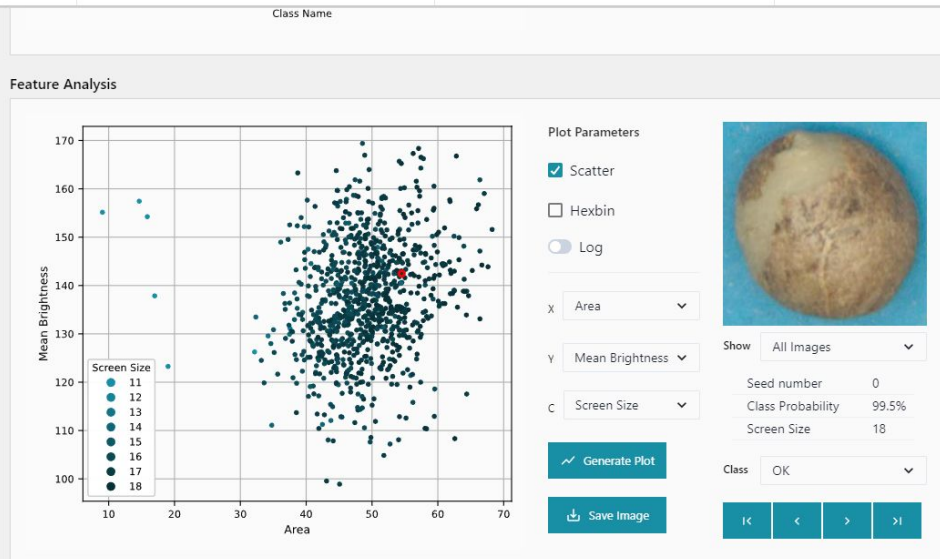
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AI Model Parameters

Average Entropy: 7.32%

Inference Confidence: **High Confidence**

Cohen's Kappa: 87.3%

Binary Accuracy

894

Ratio: 97.17%

Binary Error

26

Ratio: 2.83%

Multiclass Accuracy

892

Ratio: 96.96%

Multiclass Error

28

Ratio: 3.04%

Confusion Matrix

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4. Clique no botão **Confusion Matrix** para abrir essa métrica que é uma tabela usada para definir o desempenho de um algoritmo de classificação. Uma matriz de confusão visualiza e resume o desempenho de um algoritmo de classificação, apresentando o rótulo previsto no eixo X e o rótulo verdadeiro (imagens que foram ajustadas pelo usuário) no eixo Y. Essa métrica é relevante apenas se o usuário tiver alterado as classes das imagens no Image Mosaic.

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 Francisco Massucci Silveira
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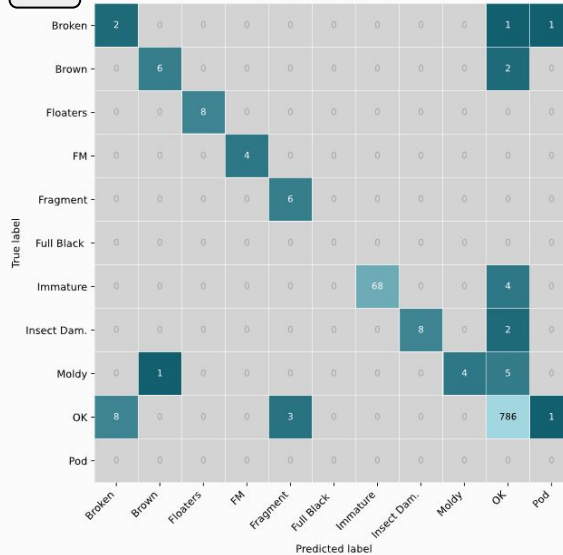
 Multiclass Accuracy
892
 Ratio: 96.96%

 Multiclass Error
28
 Ratio: 3.04%

Confusion Matrix ^

5.

Model 224_MCL_RNXT_CAN_VNM_NATV00_D86



Class	Precision	Recall	F1-Score
Floaters	1.00	1.00	1.00
FM	1.00	1.00	1.00
OK	0.98	0.98	0.98
Immature	1.00	0.94	0.97
Insect Dam.	1.00	0.80	0.89
Brown	0.86	0.75	0.80
Fragment	0.67	1.00	0.80
Moldy	1.00	0.40	0.57
Broken	0.20	0.50	0.29
Full Black	0.00	0.00	0.00
Pod	0.00	0.00	0.00

Precision: For a given class, precision is the ratio of correctly predicted instances of that class to the total number of instances predicted as that class. It answers the question, "Of all the times the model predicted a class, how often was it correct?"

Recall: For a given class, recall is the ratio of correctly predicted instances of that class to the actual number of instances of that class in the analysis. It addresses the question, "Of all the actual instances of a class, how many did the model correctly predict?"

F1 Score: This is the harmonic mean of precision and recall. It is especially useful when the class distribution is uneven. An F1 score reaches its best value at 1 (perfect precision and recall) and its worst at 0.

6.

Save Image

7.

Dashboard

5. Resultados na diagonal representam previsões corretas, já que **Predict Label** é igual ao **True Label**. Qualquer outra ocorrência representa onde e como o modelo errou durante a previsão.

6. Uma tabela com o nome das **classes**, **Precisão**, **Recall** e **F1-Score** é apresentada para cada classe. A definição dessas métricas é apresentada no texto abaixo da tabela.

7. O botão **Save Image** salva a matriz de confusão no formato jpg.

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Model Evaluation

1. Add analysis files to the assessment list

+ Add Analysis

9.

No files selected

Clear List

2. Click 'Evaluate Model' after selecting the appropriate analysis files

Evaluate Model

8.

Dashboard

8. Uma nova seção no menu lateral chamada **AI Model** tem como objetivo avaliar o desempenho de um modelo de IA após adequação das classes de diferentes análises, usando a ferramenta Image Mosaic. Para acessar esse recurso, clique em **Model Evaluation**.

9. Clique em **+Add Analysis** e selecione os arquivos que foram ajustados para a classificação de imagens.

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AI Model

Model Evaluation

1. Add analysis files to the assessment list

+ Add Analysis

1	VN_ROB_FAQ_TTD	224_MCL_RNXT_CAN_VNM_NATV00_D86	
2	VN_ROB_FAQ_TTD_test	224_MCL_RNXT_CAN_VNM_NATV01_G85	
3	VN_ROB_G1S16_TTDSUPERCL	224_MCL_RNXT_CAN_VNM_NATV00_D86	
4	VN_ROB_S16_28B	224_MCL_RNXT_CAN_VNM_NATV00_D86	
5	VN_ROB_S16_28B_test	224_MCL_RNXT_CAN_VNM_NATV01_G85	
6	VN_ROB02585_3	224_MCL_RNXT_CAN_VNM_NATV00_D86	
7	VN_ROBDAKLAD_CALIB2	224_MCL_RNXT_CAN_VNM_NATV00_D86	
8	VN_ROBDAKLAK_1	224_MCL_RNXT_CAN_VNM_NATV00_D86	
9	VN_ROBDAKLAK_2	224_MCL_RNXT_CAN_VNM_NATV00_D86	
10	VN_ROBDAKLAK_3	224_MCL_RNXT_CAN_VNM_NATV00_D86	
11	VN_ROBDAKLAK_CALIB3	224_MCL_RNXT_CAN_VNM_NATV00_D86	

Clear List

2. Click 'Evaluate Model' after selecting the appropriate analysis files

Evaluate Model

Dashboard

10. Certifique-se de que apenas os arquivos que foram analisados com o mesmo modelo de IA sejam selecionados na lista. Remova aqueles que tenham sido classificados com outro modelo.

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AI Model

Model Evaluation

1. Add analysis files to the assessment list

+ Add Analysis

1	VN_ROB_FAQ_TTD	224_MCL_RNXT_CAN_VNM_NATV00_D86	
2	VN_ROB_G1S16_TTDSUPERCL	224_MCL_RNXT_CAN_VNM_NATV00_D86	
3	VN_ROB_S16_2B8	224_MCL_RNXT_CAN_VNM_NATV00_D86	
4	VN_ROB02585_3	224_MCL_RNXT_CAN_VNM_NATV00_D86	
5	VN_ROBDAKLAD_CALIB2	224_MCL_RNXT_CAN_VNM_NATV00_D86	
6	VN_ROBDAKLAK_1	224_MCL_RNXT_CAN_VNM_NATV00_D86	
7	VN_ROBDAKLAK_2	224_MCL_RNXT_CAN_VNM_NATV00_D86	
8	VN_ROBDAKLAK_3	224_MCL_RNXT_CAN_VNM_NATV00_D86	
9	VN_ROBDAKLAK_CALIB3	224_MCL_RNXT_CAN_VNM_NATV00_D86	
10	VN_ROBFAQ_02585_2	224_MCL_RNXT_CAN_VNM_NATV00_D86	
11	VN_ROBFAQ_TTD02585_1	224_MCL_RNXT_CAN_VNM_NATV00_D86	

Clear List

2. Click 'Evaluate Model' after selecting the appropriate analysis files

Evaluate Model

11.

Dashboard

11. Clique em **Evaluate Model** para gerar a avaliação.

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AI Model

Model Evaluation

Selected Analysis: 37

Average Entropy 8.2%

Inference Confidence **High Confidence**

Cohen's Kappa 77.9%

Binary Accuracy
44204
Ratio: 92.05%

Binary Error
3819
Ratio: 7.95%

Multiclass Accuracy
42714
Ratio: 88.94%

Multiclass Error
5309
Ratio: 11.06%

Confusion Matrix ^

Model 224_MCL_RNXT_CAN_VNM_NATV00_D86

True label \ Predicted label	Broken	Brown	Floater	FM	Fragment	Full Black	Immature	Insect Dam.	Moldy	OK	Pod
Broken	762	0	0	0	33	0	3	1	1	25	1
Brown	41	1499	0	9	51	18	809	17	89	108	8
Floater	4	0	760	0	18	0	6	0	2	56	0
FM	0	0	0	1390	4	1	3	0	0	0	6
Fragment	6	0	0	15	2315	0	2	1	0	3	0
Full Black	1	15	0	4	10	132	36	2	20	3	4
Immature	8	1	0	4	17	1	3554	2	9	111	0
Insect Dam.	5	0	0	0	15	3	101	355	8	86	0
Moldy	5	8	0	4	4	2	22	14	406	34	0
OK	166	9	1	16	201	23	2900	30	41	31478	6
Pod	0	0	0	14	2	0	0	0	0	0	63

Class	Precision	Recall	F1-Score
FM	0.95	0.99	0.97
Floater	1.00	0.90	0.95
OK	0.99	0.90	0.94
Fragment	0.87	0.99	0.92
Broken	0.76	0.92	0.84
Moldy	0.70	0.81	0.76
Pod	0.72	0.80	0.75
Brown	0.98	0.57	0.72
Insect Dam.	0.84	0.62	0.71
Full Black	0.73	0.58	0.65
Immature	0.48	0.96	0.64

Precision: For a given class, precision is the ratio of correctly predicted instances of that class to the total number of instances predicted as that class. It answers the question, "Of all the times the model predicted a class, how often was it correct?"

Recall: For a given class, recall is the ratio of correctly predicted instances of that class to the actual number of instances of that class in the analysis. It addresses the question, "Of all the actual instances of a class, how many did the model correctly predict?"

F1 Score: This is the harmonic mean of precision and recall. It is especially useful when the class distribution is uneven. An F1 score reaches its best value at 1 (perfect precision and recall) and its worst at 0.

12.

Dashboard

12. Semelhante aos recursos presentes no dashboard para um único arquivo, esta ferramenta concatena a leitura de múltiplos arquivos, apresentando uma avaliação completa do modelo selecionado, além de sua acurácia e capacidade de generalizar para novos dados. É importante notar que a tabela apresenta, de cima para baixo, as previsões de classe mais precisas, indicando assim as classes na parte inferior que necessitam de mais imagens para melhorar o desempenho do modelo.



CSMART COFFEE TECHNOLOGIES SA

Francisco Massucci Silveira
Founder | CTO

webpage: www.cmsart.ai

email to: grading@cmsmart.ai

whatsapp: +55 19 998267366

Address: Av. Alan Turing, 776 - Sala 3,
Cidade Universitária. Campinas/SP - Brasil - CEP 13083-898