

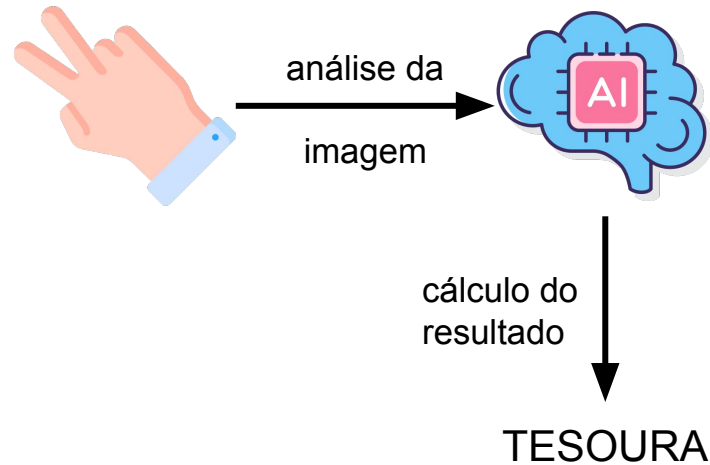
Classificador de Imagens do Jogo Pedra, Papel, Tesoura



Marcelo Cesário Miguel
William Augusto Reis da Silva

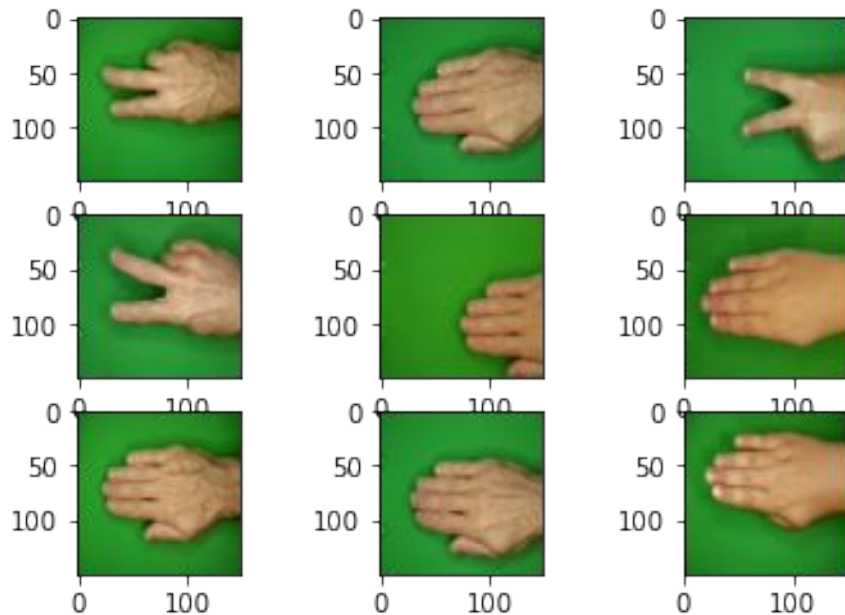
Contexto

- Utilizar uma rede neural para identificar qual o formato de uma mão;
- A partir de duas imagens e suas previsões, identificar o vencedor da 'batalha'.



Organização

- Referência das imagens:
<https://www.kaggle.com/drgfreeman/rockpaperscissors>
- Lista com a indicação do formato da imagem:
 - Pedra: 0;
 - Tesoura: 1;
 - Papel: 2.
- Separação das imagens em conjunto de treinamento (80%) e testes (20%)



Construção do Modelo

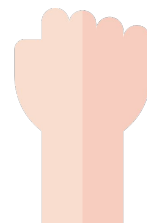
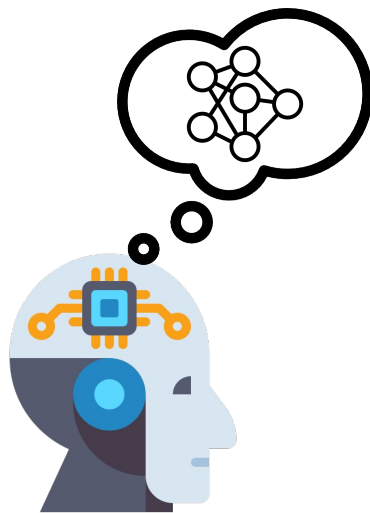
- Modelo com 3 camadas:
 - 16 filtros;
 - 32 filtros;
 - 64 filtros;
 - Camada de Pooling em seguida;
- Uma flatten para 'achatar' a saída;
- Duas denses:
 - Resultado final sendo uma lista de 3 termos (pedra, papel, tesoura).

Model: "sequential"

Layer (type)	Output Shape	Param #
=====		
conv2d (Conv2D)	(None, 148, 148, 16)	448
max_pooling2d (MaxPooling2D)	(None, 74, 74, 16)	0
conv2d_1 (Conv2D)	(None, 72, 72, 32)	4640
max_pooling2d_1 (MaxPooling2D)	(None, 36, 36, 32)	0
conv2d_2 (Conv2D)	(None, 34, 34, 64)	18496
max_pooling2d_2 (MaxPooling2D)	(None, 17, 17, 64)	0
flatten (Flatten)	(None, 18496)	0
dense (Dense)	(None, 128)	2367616
dense_1 (Dense)	(None, 3)	387
=====		
Total params: 2,391,587		
Trainable params: 2,391,587		
Non-trainable params: 0		

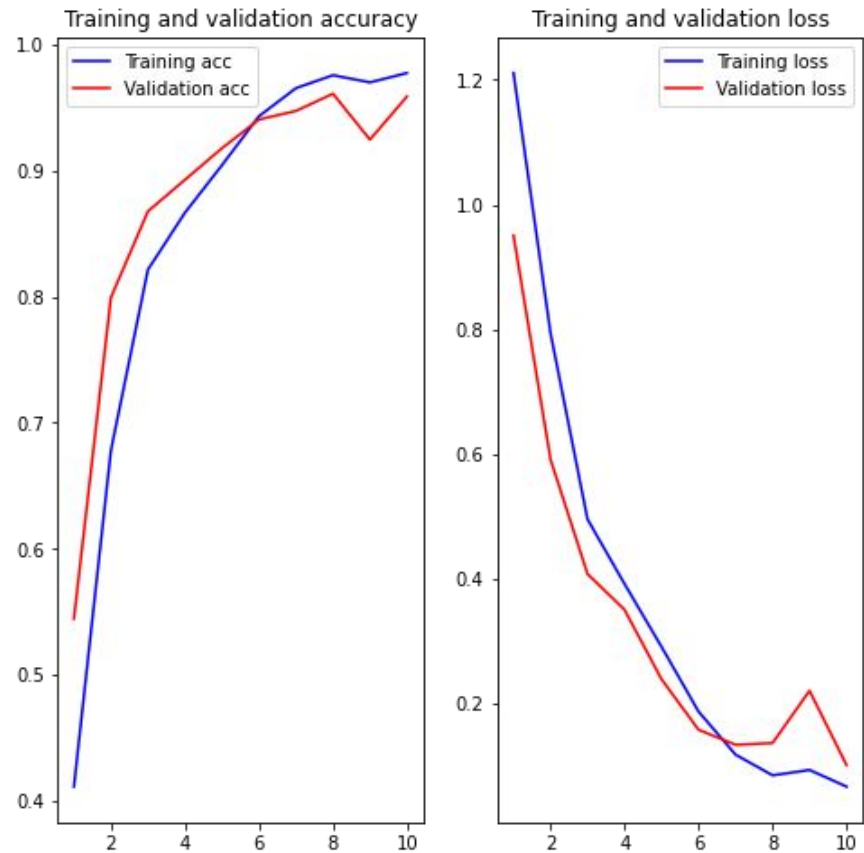
Aprendizagem do modelo

- Passagem das imagens de treinamento e testes como input ao modelo
- Utilização de 10 'épocas' (epochs)
- Treinamento do modelo com as imagens de treinamento
- Cálculo da acurácia do modelo para as imagens de teste em cada época

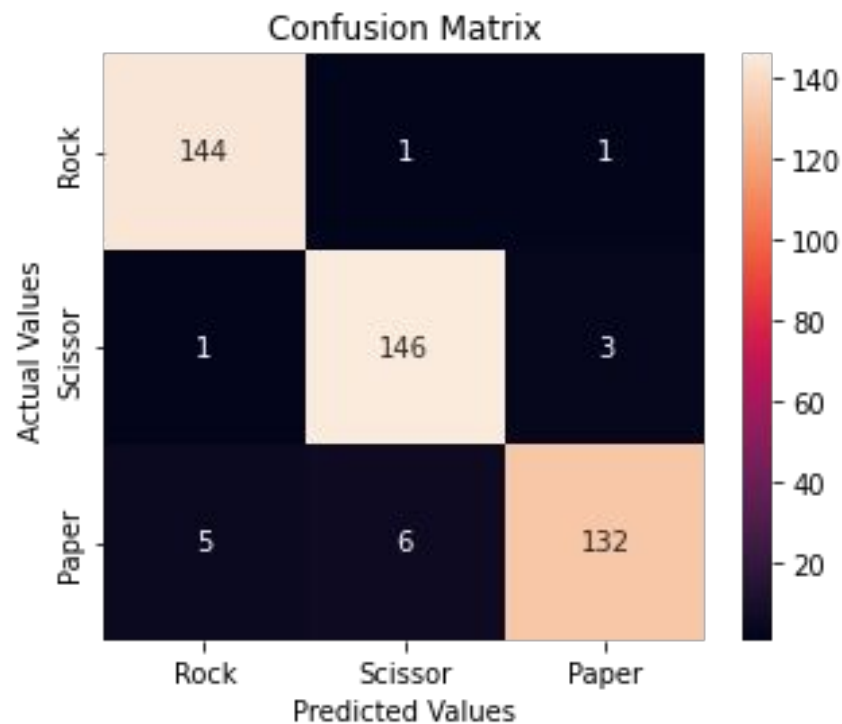


Desempenho do modelo

- **Acurácia:**
 - Treinamento: 0,98%
 - Testes: 0,95%
- **Loss:**
 - Treinamento: 0,06
 - Testes: 0,10



Desempenho do modelo



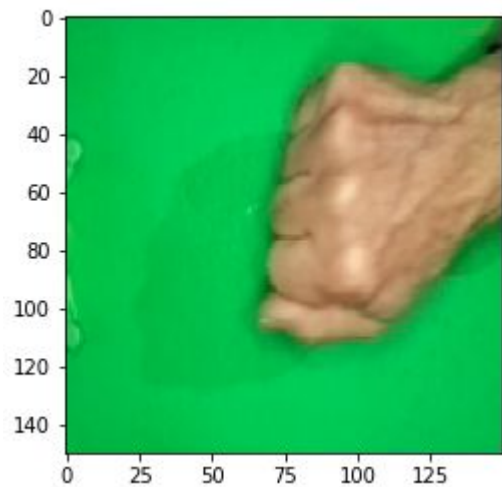
Desempenho do modelo

- Qual a proporção de acerto em cada formato?
 - Precision
- Quantas predições do modelo realmente estão certas?
 - Recall

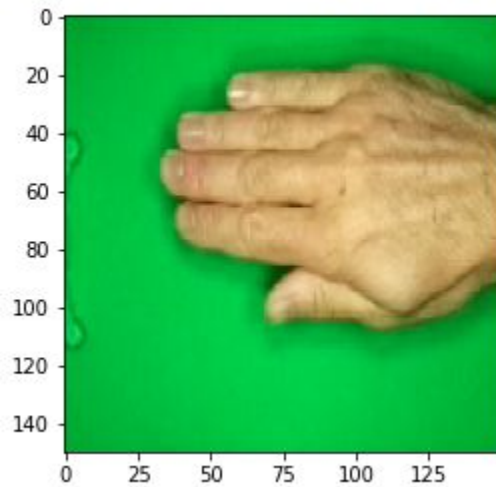
	precision	recall
Rock	0.96	0.99
Scissor	0.95	0.97
Paper	0.97	0.92

Predições

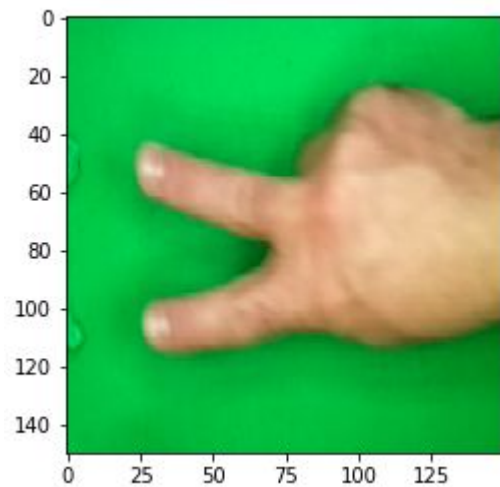
I am 100.00% sure this is a rock



I am 100.00% sure this is a paper

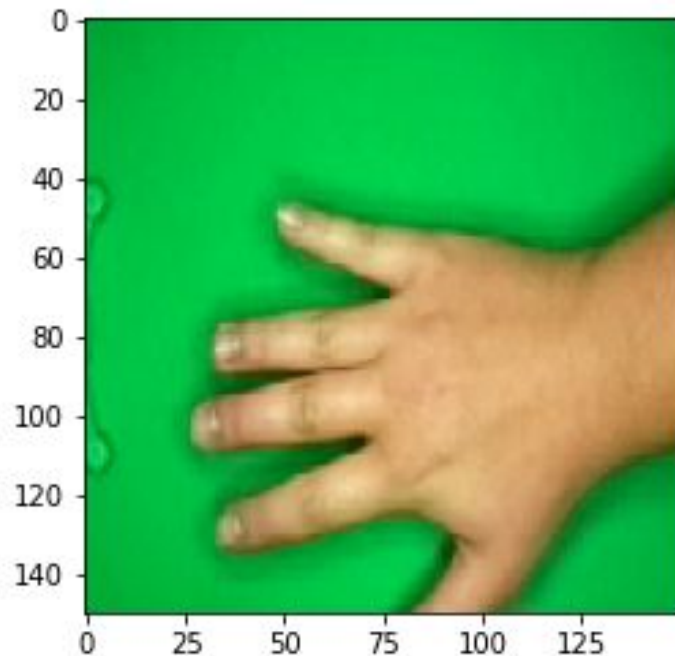


I am 100.00% sure this is a scissor



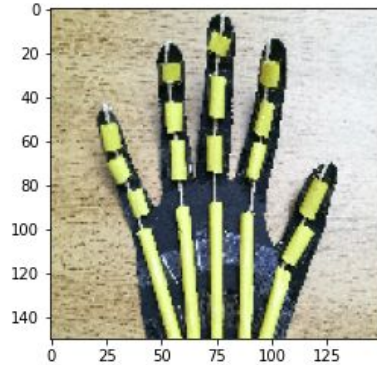
Predições (incorretas)

I am 100.00% sure this is a scissor

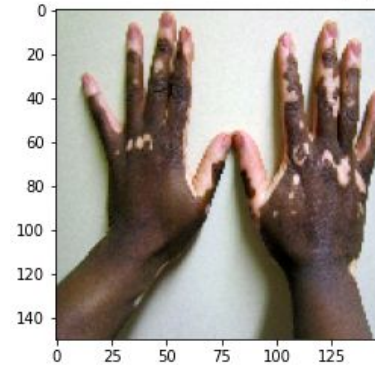


Predições (imagens diferentes)

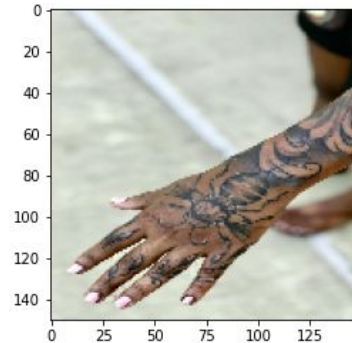
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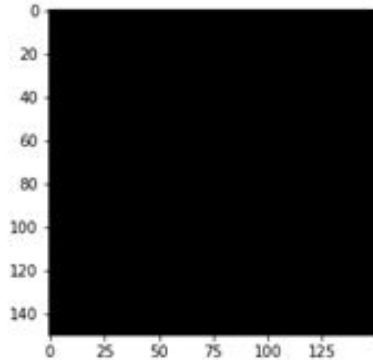


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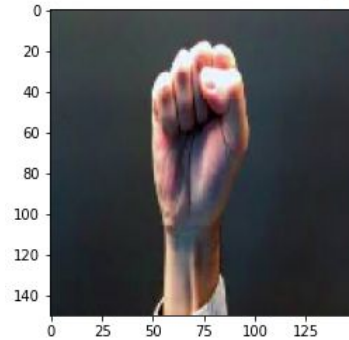


Predições (imagens diferentes)

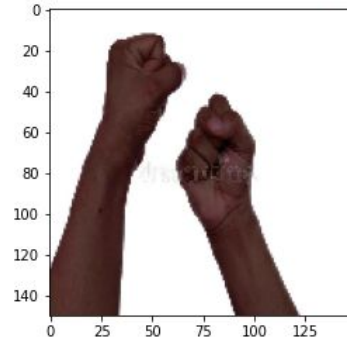
I am 39.29% sure this is a paper



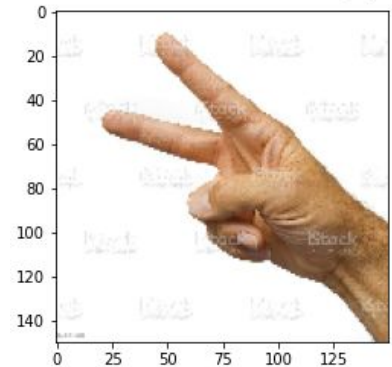
I am 100.00% sure this is a paper



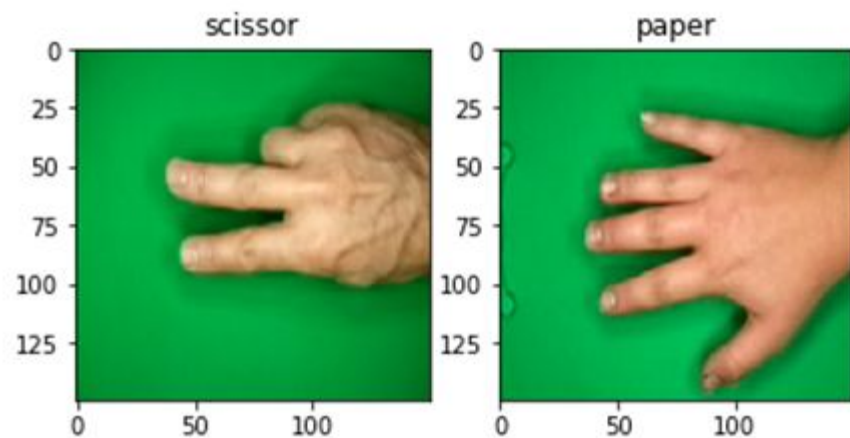
I am 100.00% sure this is a paper



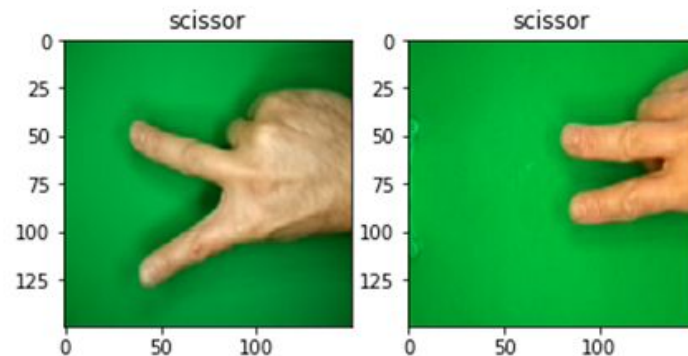
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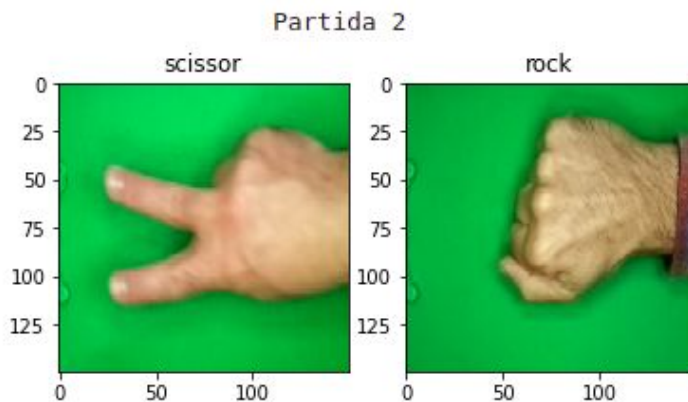
Competição



Winner: Player 1



Draw



Winner: player 2

Obrigado!