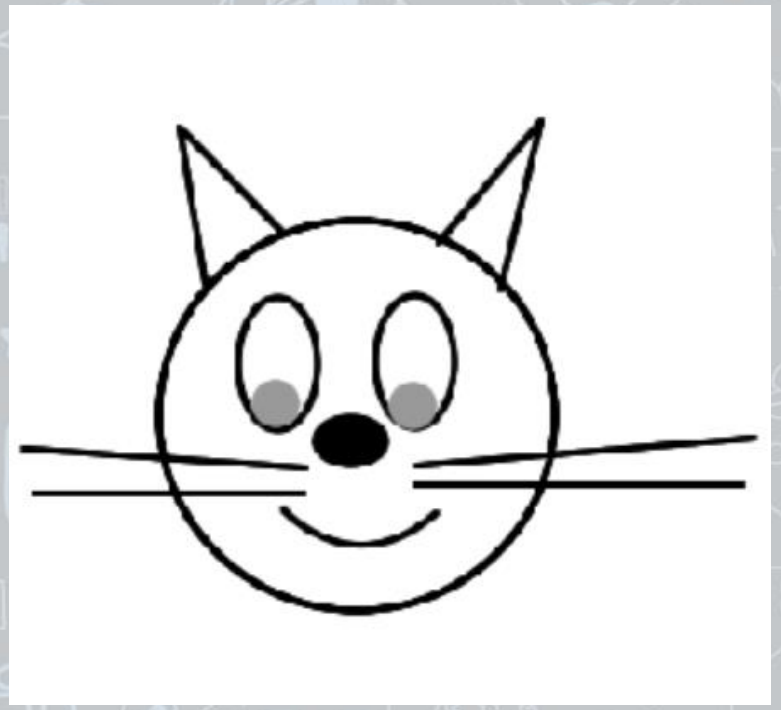
Serviços cognitivos da Microsoft para classificação de imagens

MURILLO GRÜBLER

Agenda

- Classificação de Imagens
- Serviços Cognitivos
  - Computer Vision
  - Custom Vision
- Demonstração

Classificação de Imagens



monocromático

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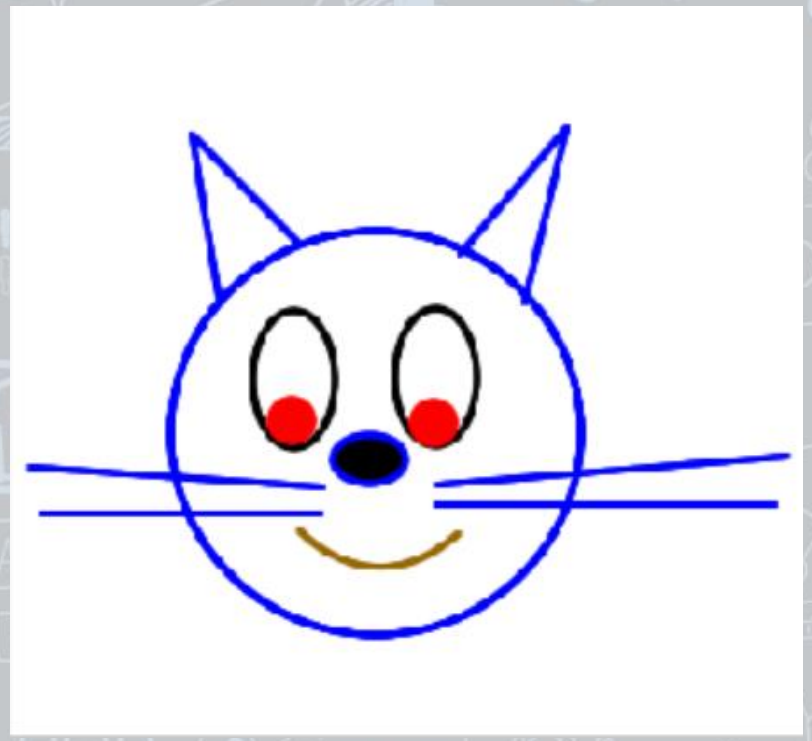
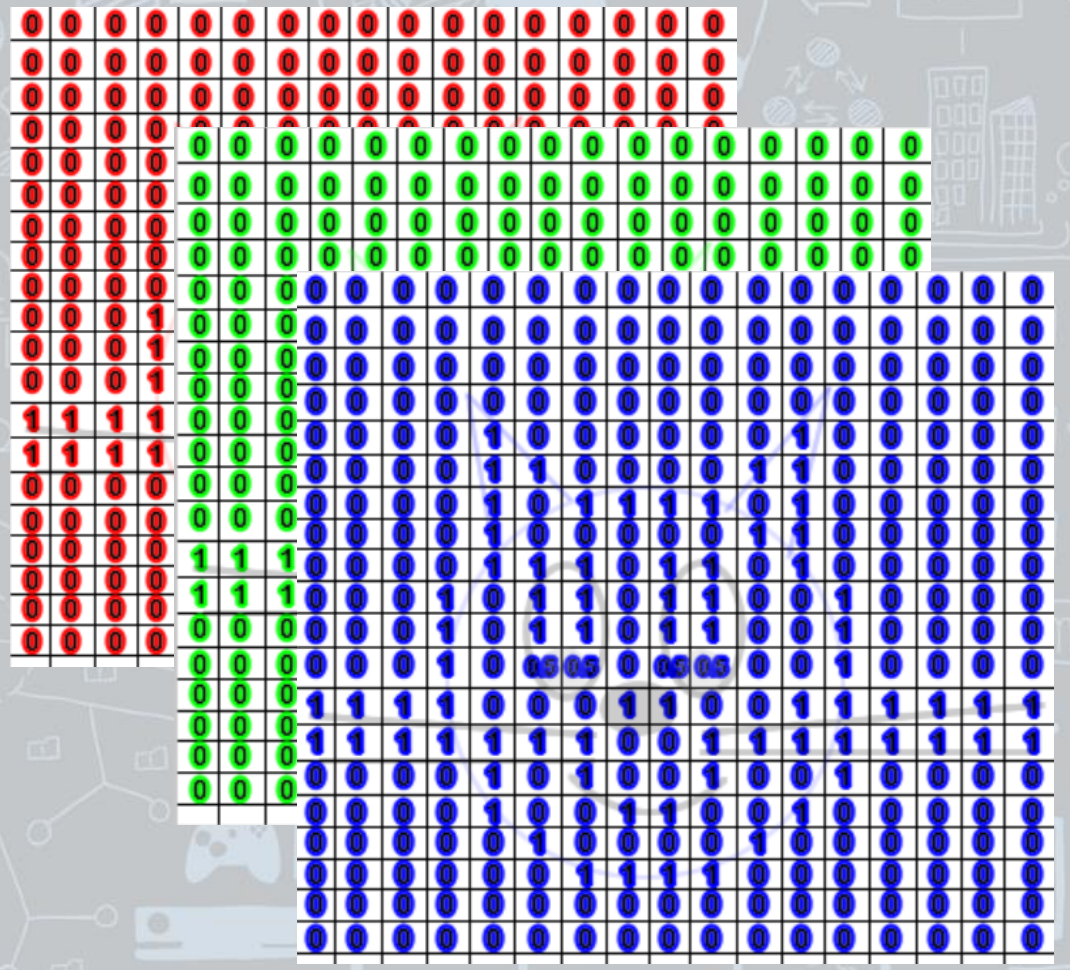
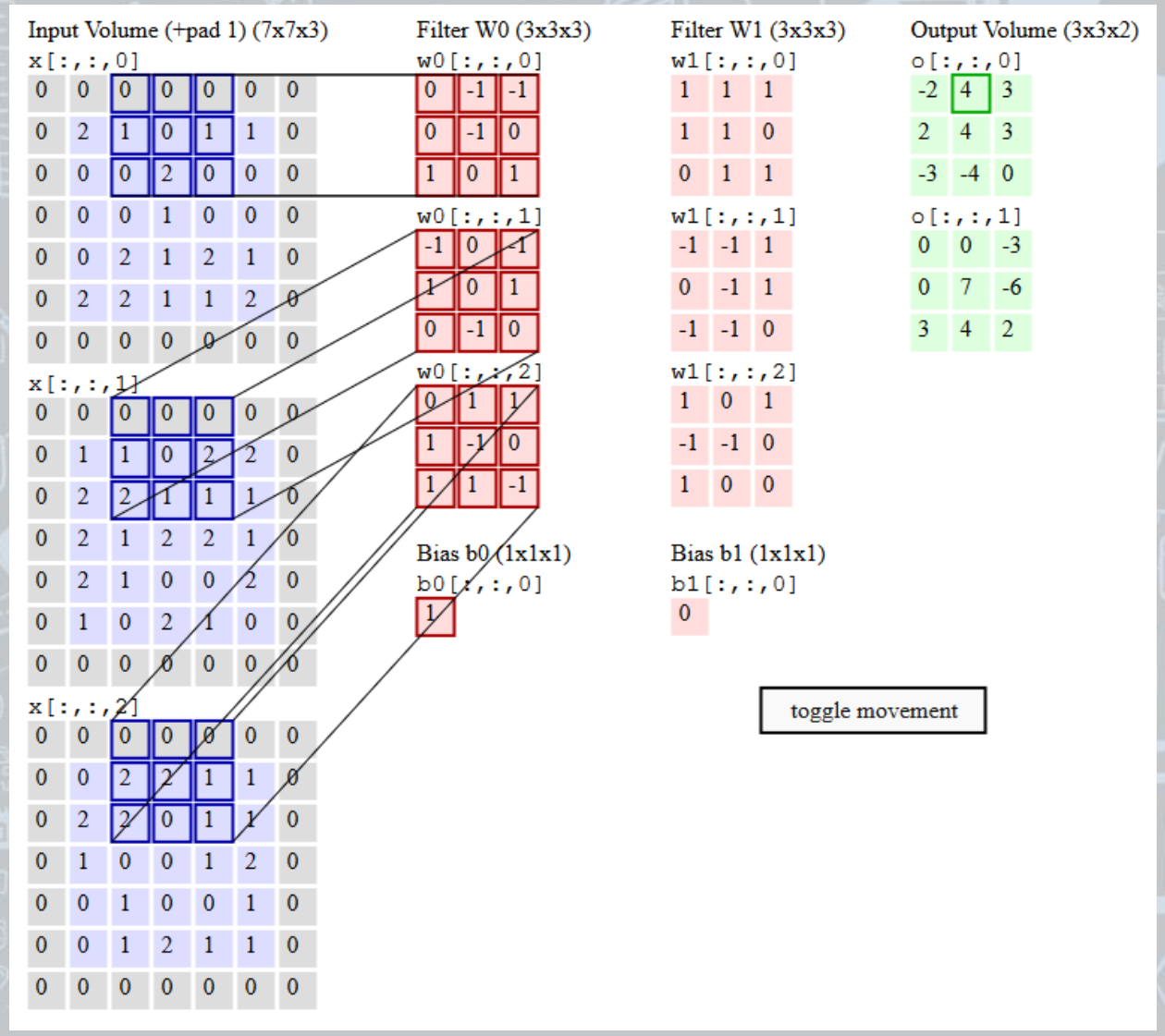
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	1	0	0	0	0	0	0	1	0	0	0	0	0
0	0	0	0	1	1	0	0	0	0	1	1	0	0	0	0	0
0	0	0	0	1	0	1	1	1	1	0	1	0	0	0	0	0
0	0	0	0	1	0	0	0	0	0	1	1	0	0	0	0	0
0	0	0	0	1	1	1	0	1	1	0	1	0	0	0	0	0
0	0	0	1	0	1	1	0	1	1	0	0	1	0	0	0	0
0	0	0	1	0	1	1	0	1	1	0	0	1	0	0	0	0
0	0	0	1	0	0.5	0.5	0	0.5	0.5	0	0	1	0	0	0	0
1	1	1	1	0	0	0	1	1	0	0	1	1	1	1	1	1
1	1	1	1	1	1	1	0	0	1	1	1	1	1	1	1	1
0	0	0	0	1	0	1	0	0	1	0	0	1	0	0	0	0
0	0	0	0	1	0	0	1	1	0	0	1	0	0	0	0	0
0	0	0	0	0	1	0	0	0	0	1	0	0	0	0	0	0
0	0	0	0	0	0	1	1	1	1	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Classificação de Imagens

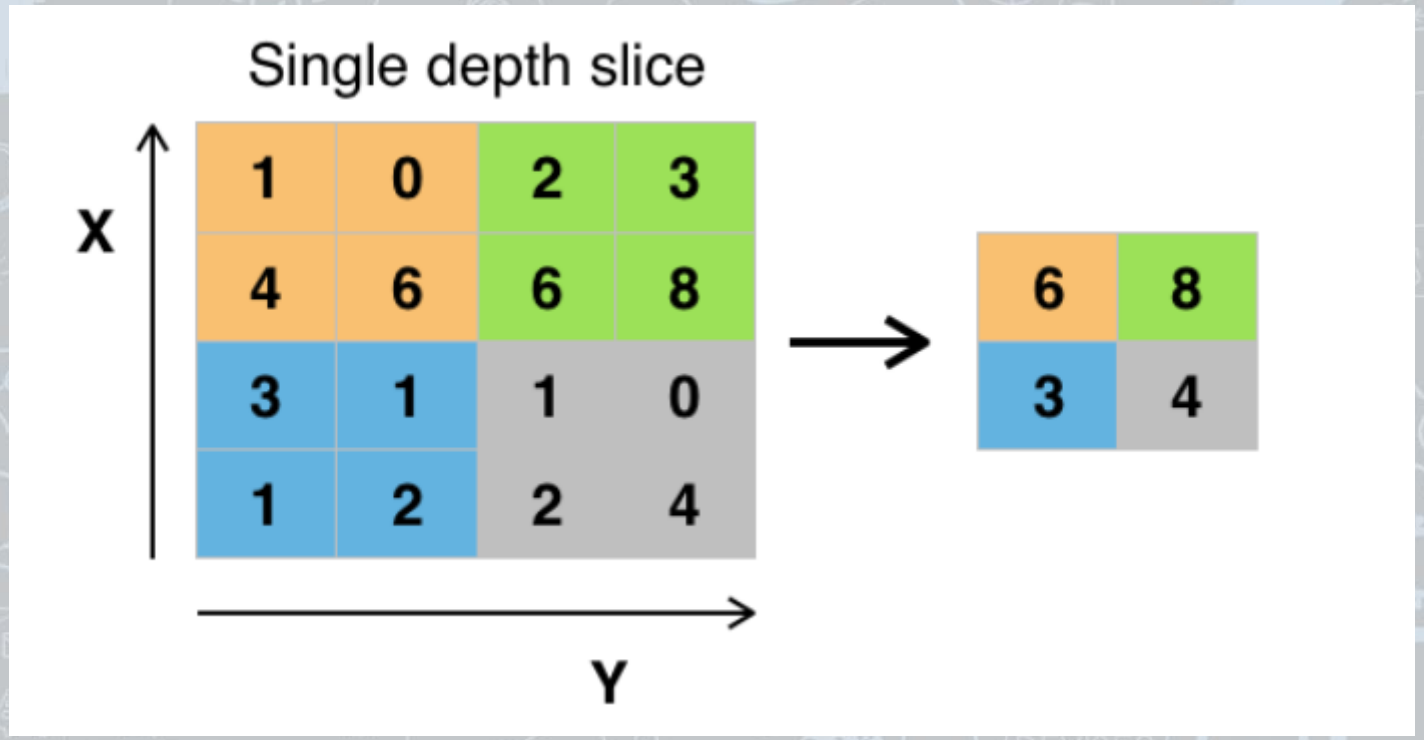




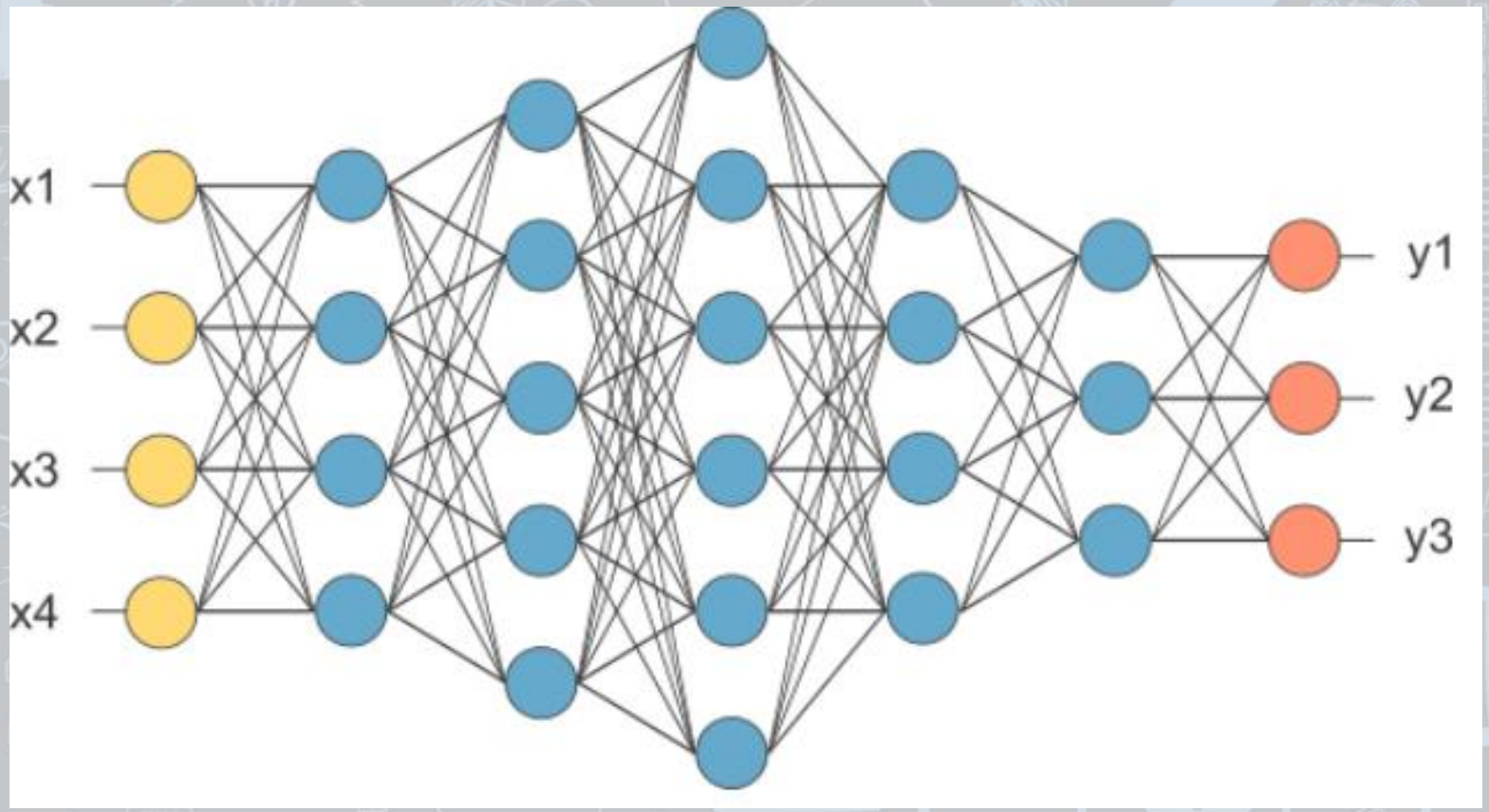
Convolutional Layer



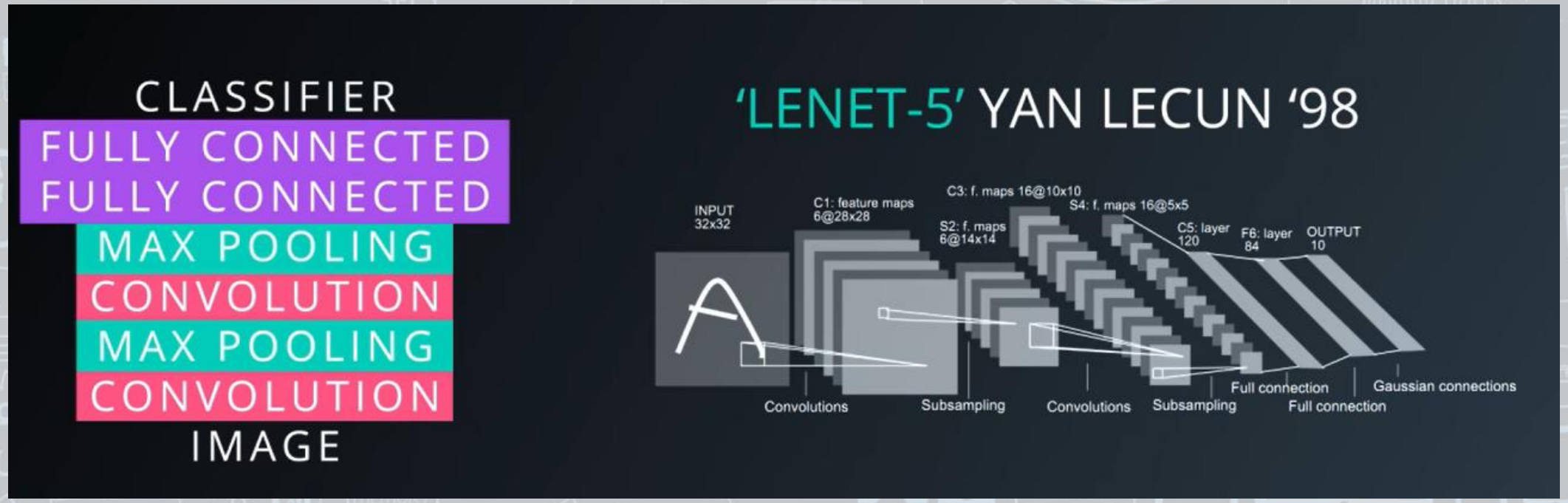
Pooling Layer



Fully-connected layer



Arquitetura CNN

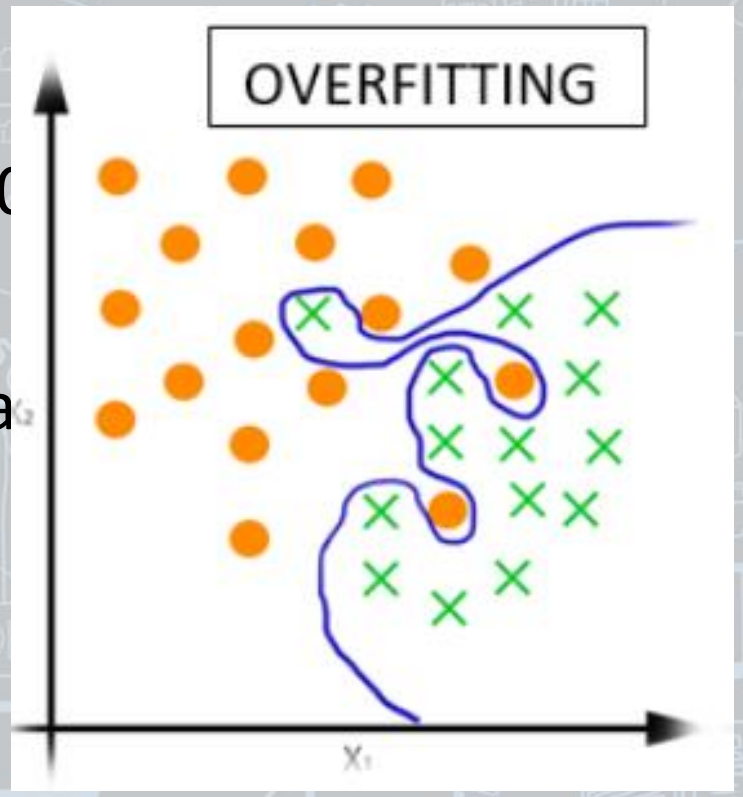


Porque não utilizar somente Neural Network

Em uma rede neural, todos os nós estão conectados entre si, e todos recebem os valores de entrada;

Imagem: 800x600 = 480000 * 3 [R,G,B] = 1440

A convolução diminui o valor de entrada para a
e evitar o overfitting;



Serviços Cognitivos

- Visão;
- Fala;
- Linguagem;
- Pesquisa.

Serviços Cognitivos

- **Visão;**
- Fala;
- Linguagem;
- Pesquisa.

Integrações

- Biblioteca disponível no NuGet para aplicações .Net;
- REST API.

Computer Vision da Microsoft

1. Criar um projeto de Pesquisa Visual Computacional no Azure;
    1. Selecionar plano;
    2. Selecionar localização;
2. Selecione a chave.

[{ "age": 11, "gender": "Male", "faceRectangle": { "left": 113, "top": 314, "width": 222, "height": 222 } }, { "age": 11, "gender": "Female", "faceRectangle": { "left": 1200, "top": 632, "width": 215, "height": 215 } }, { "age": 41, "gender": "Male", "faceRectangle": { "left": 514, "top": 223, "width": 205, "height": 205 } }, { "age": 37, "gender": "Female",

Tags

mountain | outdoor | car | road | ocean | beach | water | background | front | sitting | driving | surfing | yellow | parked | motorcycle | black | orange | riding | board | man | white | mirror | people | plane

Categories

trans_car | 0.99609375

Caption

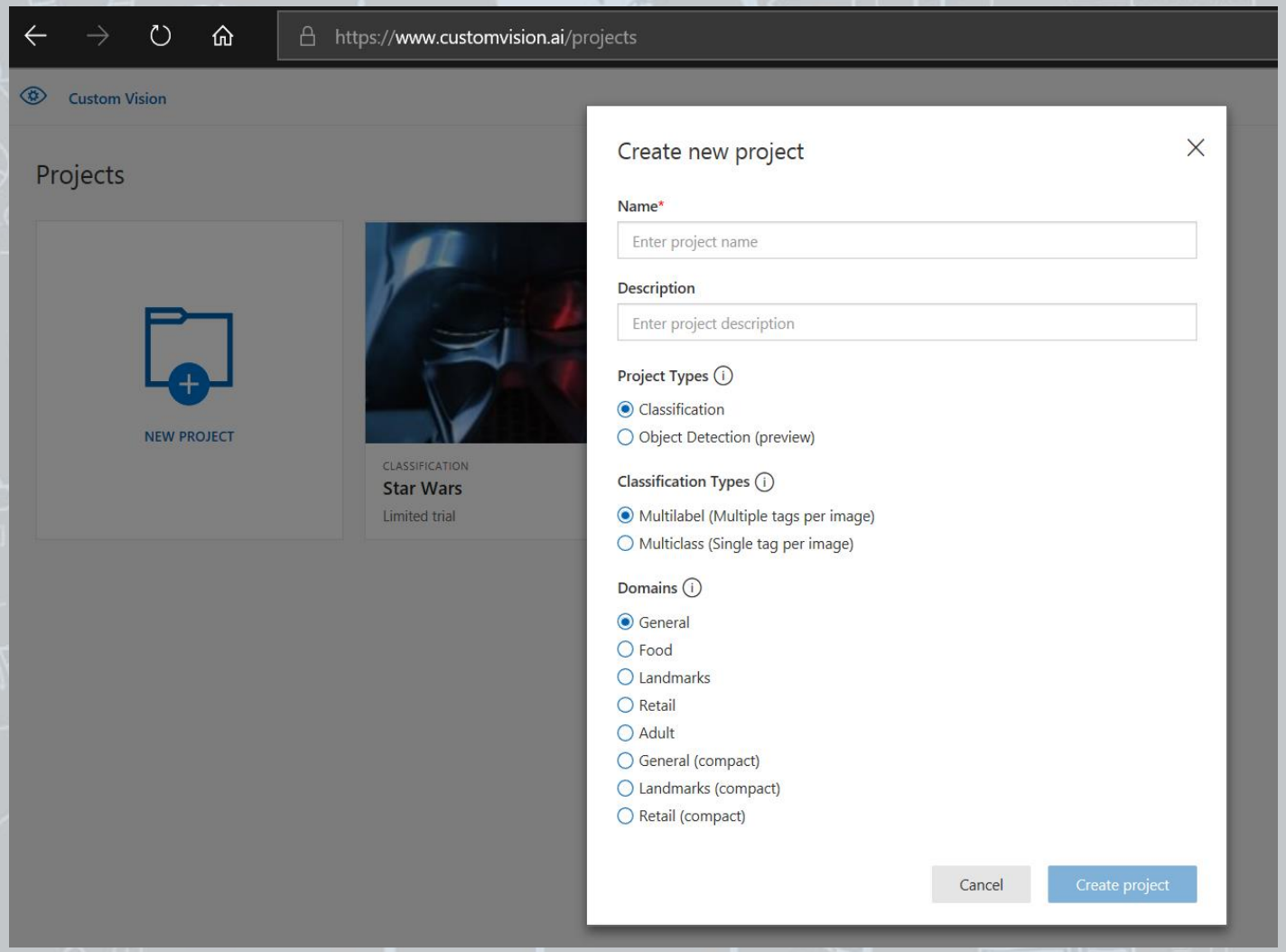
a car with a mountain in the background | 0.926429002694176

Custom Vision da Microsoft

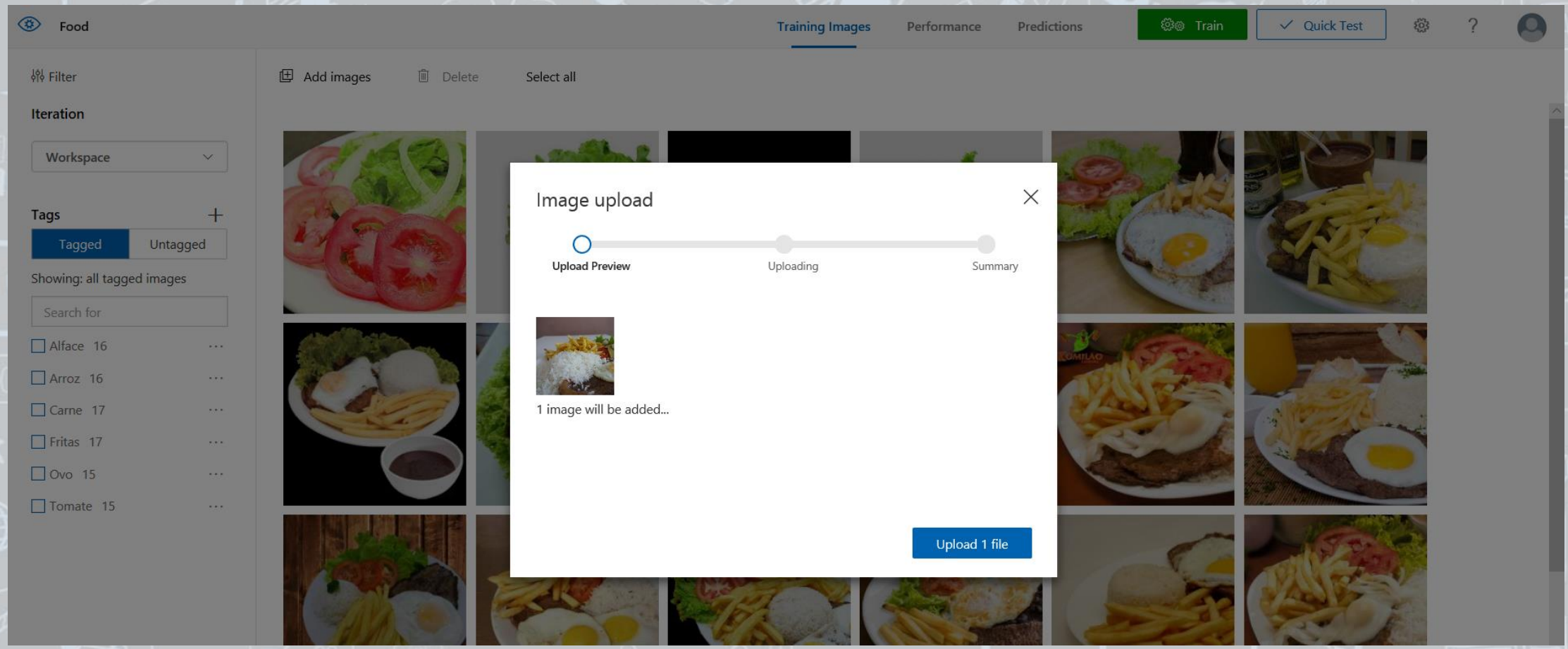
1. Criar um projeto;
2. Carregue as imagens para a plataforma;
3. Rotule as imagens;
4. Treine o modelo.

Criar um projeto

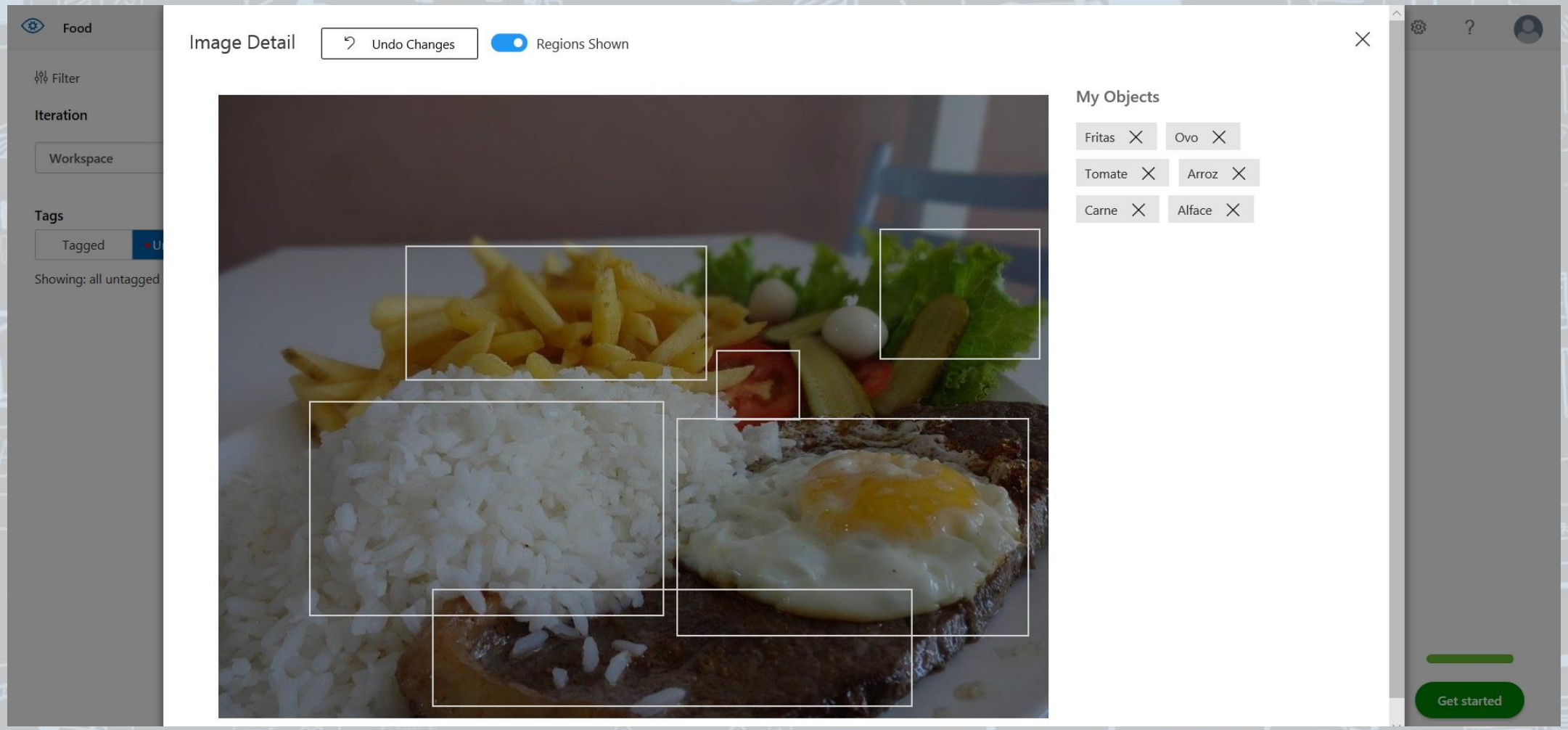
- www.customvision.ai



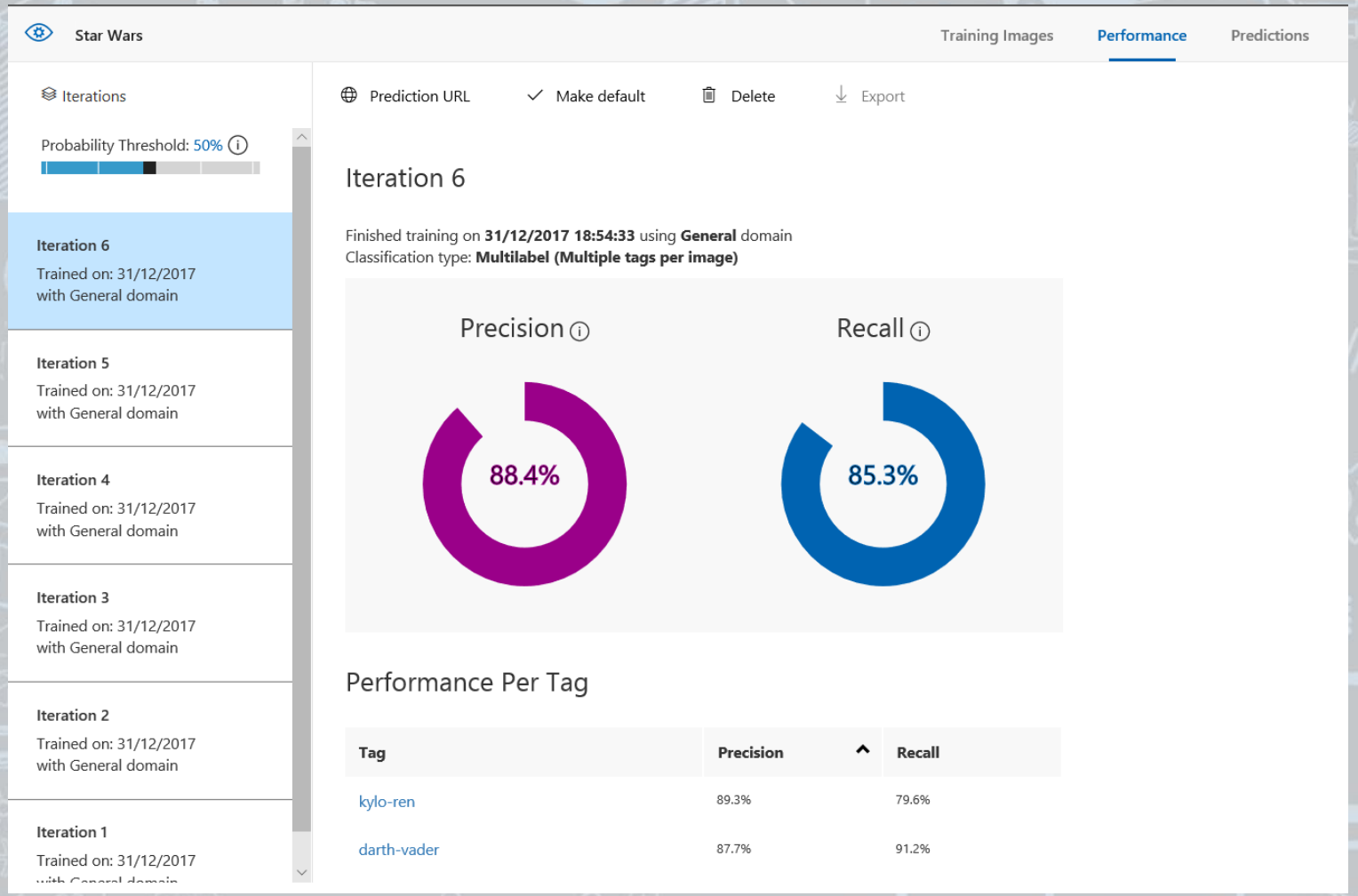
Carregue as imagens



Rotule as imagens



Treine o modelo



Avaliação

- **Precision**: Se uma tag for prevista pelo seu modelo, qual a probabilidade de isso estar certo?

  Modelo retornou nos testes: **Fritas, Arroz, Carne;**

  Imagem com as tags originais: **Frias, Arroz, Feijão, Tomate;**

  Resultado: 2/3 = 0,67

Avaliação

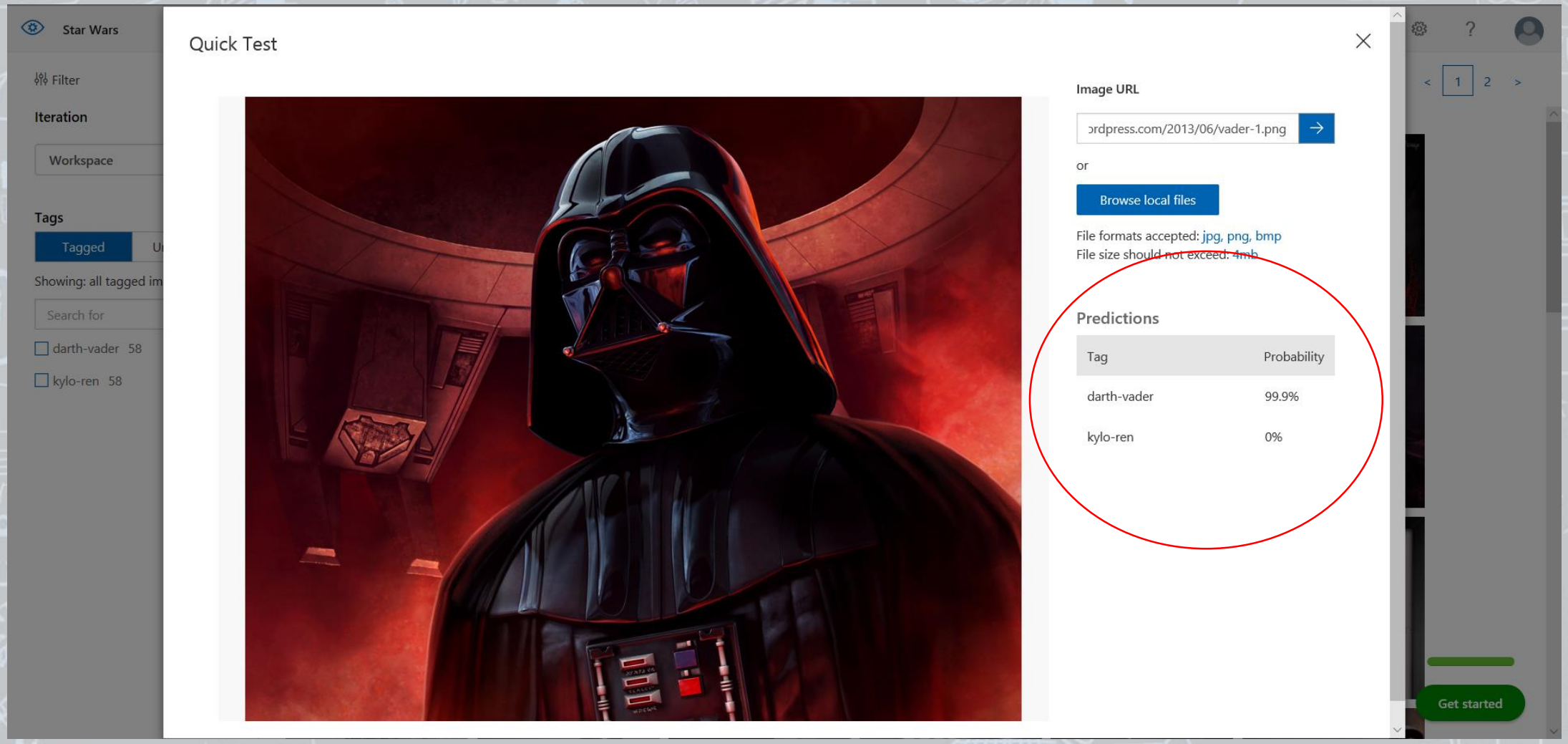
- **Recall**: Das tags que devem ser previstas corretamente, qual porcentagem seu modelo encontrou corretamente?

  Modelo retornou nos testes: **Fritas, Arroz, Carne;**

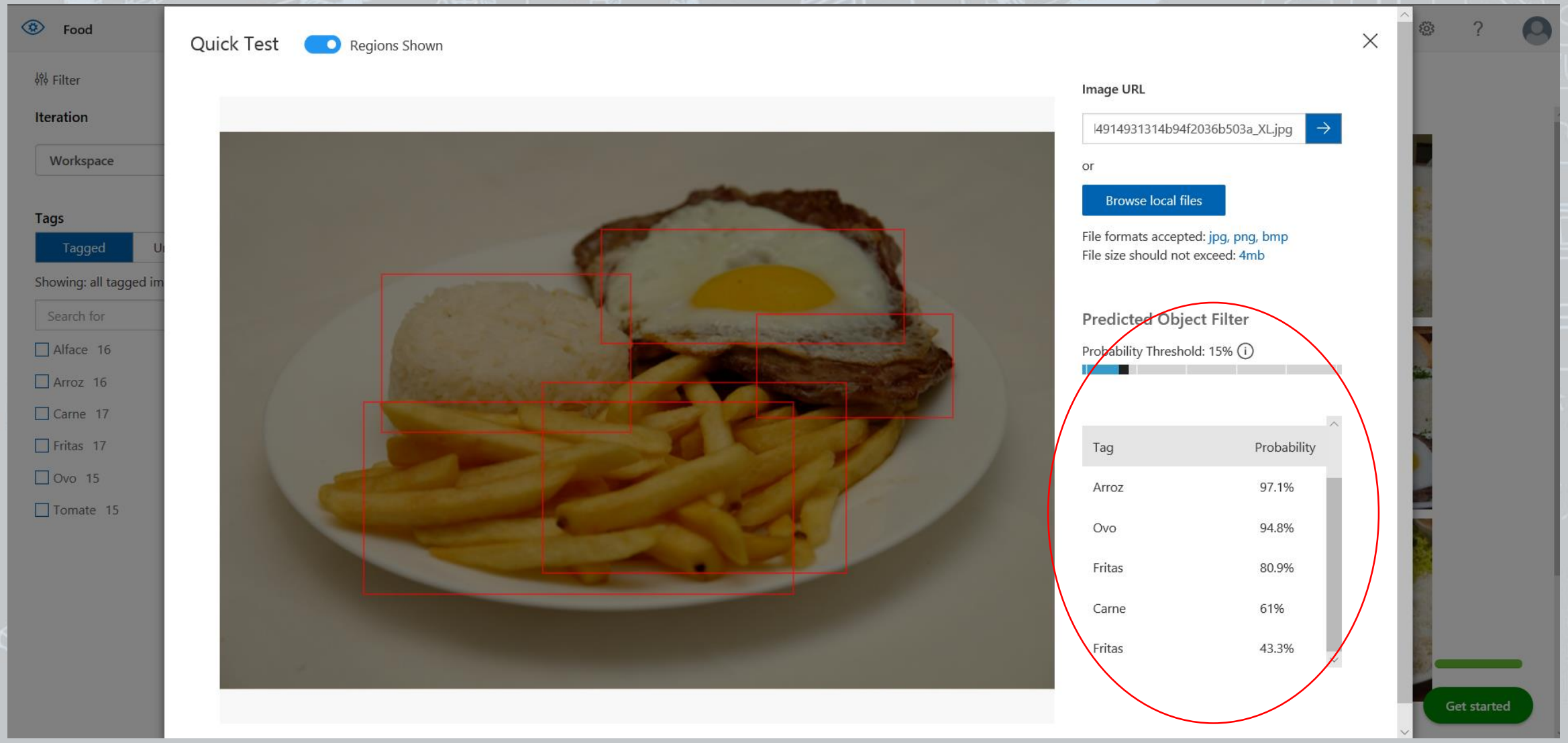
  Imagem com as tags originais: **Frias, Arroz, Feijão, Tomate;**

  Resultado: 2/4 = 0,5

Classificando



Detectando objetos



Demonstração


INSIGHTS
SQL
STORAGE
IT
AZURE
BYODY
CLOUD
SECURITY
PATTERNS
DEVELOPERS
SOCIAL
APPS
PLATFORM
WEB
MAGIC
PEOPLE
MEMORY
DEVICES

Dúvidas???

Referências

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- https://medium.com/brasil-ai/classificando-imagens-com-o-custom-vision-da-microsoft-c6ee54aba953
- https://medium.com/brasil-ai/analisando-imagens-com-computer-vision-api-da-microsoft-520ef28d8eaf
- http://cs231n.github.io/convolutional-networks/

Contato

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