

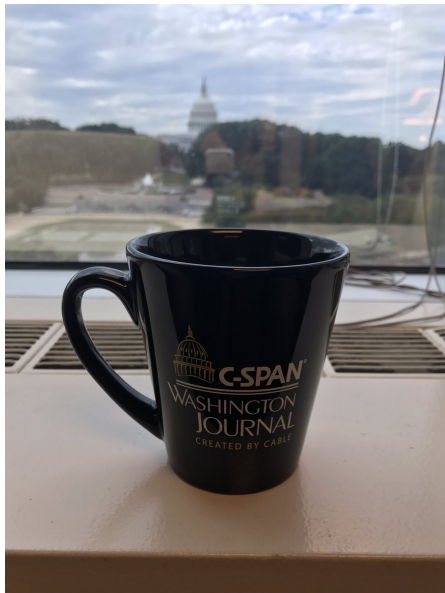
Autotagging Outline

- ▶ What are auto-taggers and auto-tagging services?
- ▶ What can they do?
- ▶ What are the issues in using these services?
- ▶ Example: Amazon Rekognition

What is image auto-tagging?

- ▶ Companies and researchers have trained CNNs which will quickly 'look' at your images and return predictions about the image
- ▶ Some are open source
- ▶ Services are easily accessible with APIs and many programming languages (we're using **Python** to make calls/requests from the API)
- ▶ Services examples: AWS Rekognition, Google Cloud Vision, Microsoft's Computer Vision, IBM, DeepAI, Clarifai...

What can they do?



AWS tags (Probability):

Coffee Cup (98.2)

Cup (98.2)

Road (60.6)

Freeway (52.6)

Highway (52.6)

Building (50.5)

City (50.5)

Downtown (50.5)

What can they do?

- ▶ **Recognizing objects and scenes (detecting labels)**
- ▶ **Detecting and identifying celebrities**
- ▶ Detecting and analyzing faces (gender, age, emotions, etc.)
- ▶ Content moderation (graphic images, NSFW)
- ▶ Text extraction
- ▶ And more!

What are the Problems?

- ▶ Data privacy
- ▶ Research reproducibility concerns
- ▶ Known biases, especially on race and gender dimensions
- ▶ May be less of a concern with open source CNNs

Important Lesson for All CNNs and Services

CNNs are only as useful as their training and test data



Important Lesson



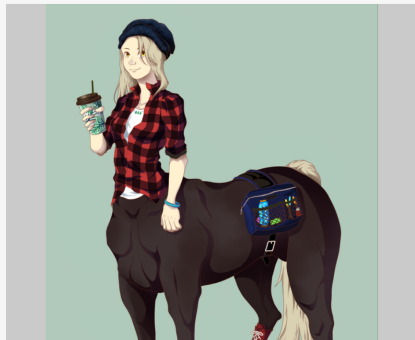
Important Lesson



Important Lesson

Object and scene detection

Rekognition automatically labels objects, concepts and scenes in your images, and provides a confidence score.



Done with the demo?

[Learn more](#)

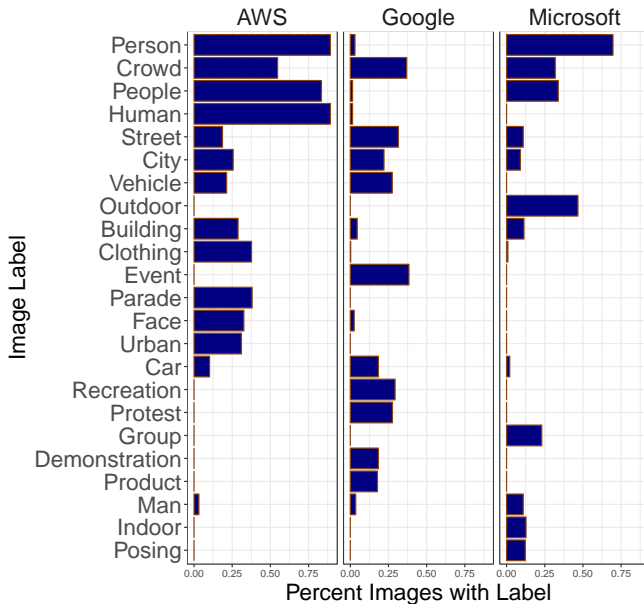
▼ Results

Human	99.2 %
People	99.2 %
Person	99.2 %
Clown	54.7 %
Performer	54.7 %
Costume	53 %
Animal	51.6 %
Colt Horse	51.6 %
Horse	51.6 %
Mammal	51.6 %

Important Lesson



Same images, different services, different labels...



Amazon's Rekognition

Overview of pipeline:

- ▶ Collect images, do manual labeling for validation
- ▶ Connect to the Rekognition API using access keys (free for 5,000 API calls per month for your first year) [Python and boto3]
- ▶ Send each image to the API and get a response object back (either **object/scene detection** or **celebrity recognition** in the demo) [Python]
- ▶ Format the responses into a csv [Python]
- ▶ See example code on Code Ocean/Github, but note that it won't run without access keys

Break

Create Code Ocean account if you haven't already and you want to run code.