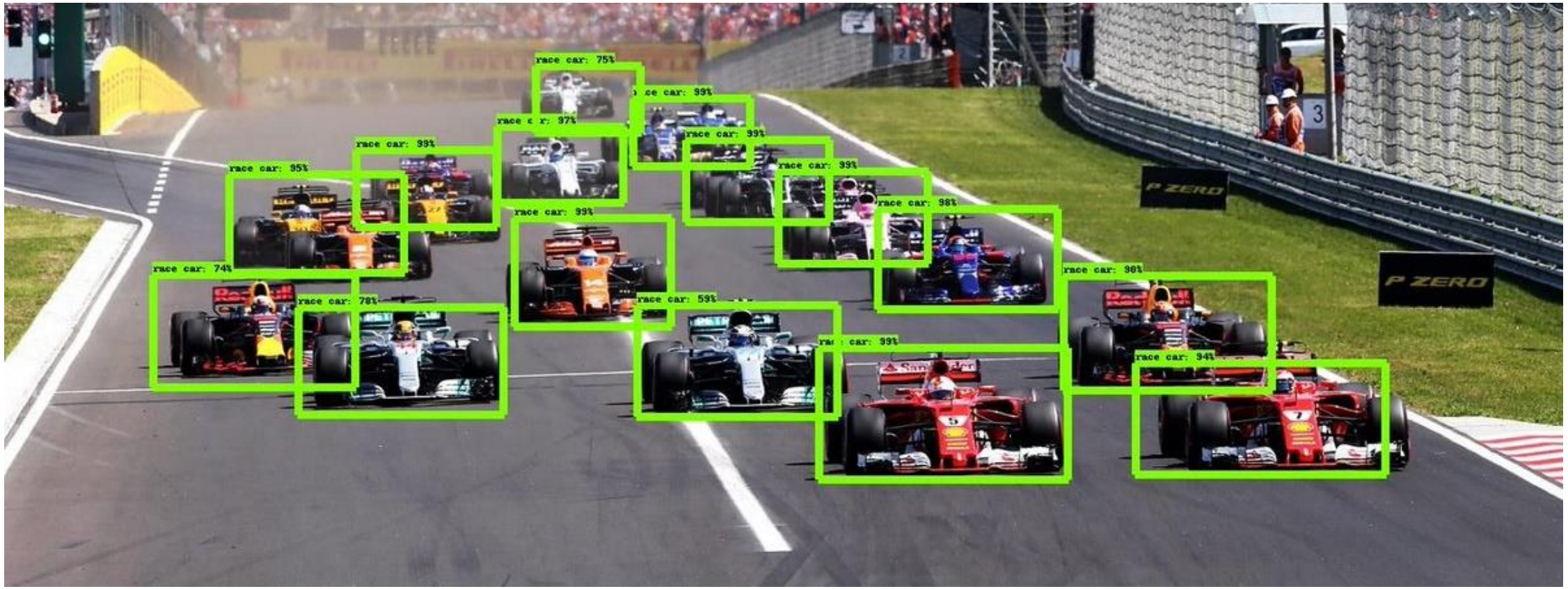
Microsoft

Workshop: Using Computer Vision for Object Classification and Detection

bit.ly/BucharestAIBootcamp

Sorin Pește
Data & AI Evangelist @ Microsoft

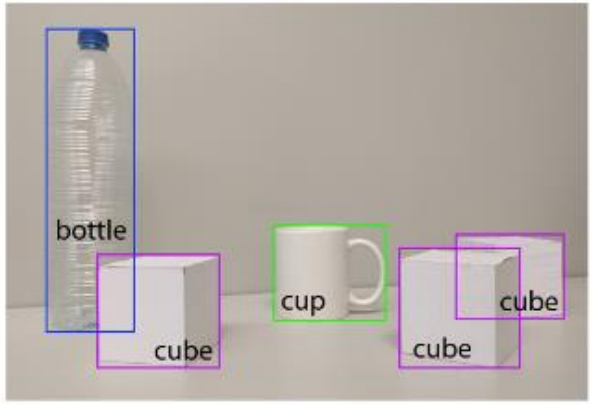


Computer Vision

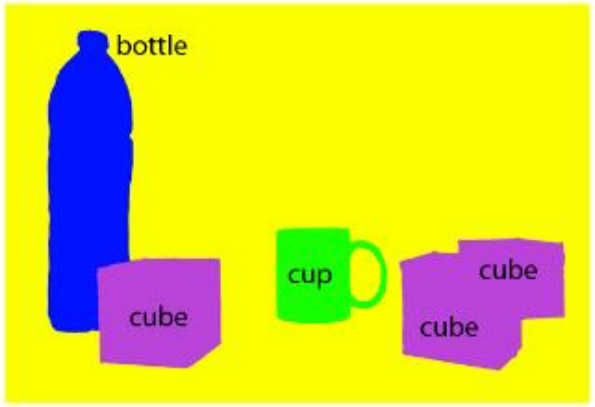
The science and technology of machines that see.

What Can Computer Vision Do Today?

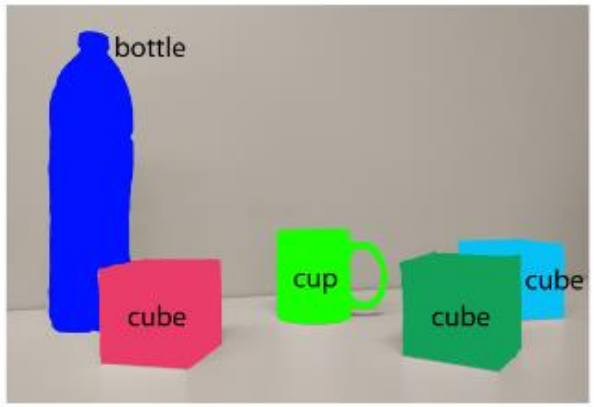
(a) Image classification



(b) Object localization

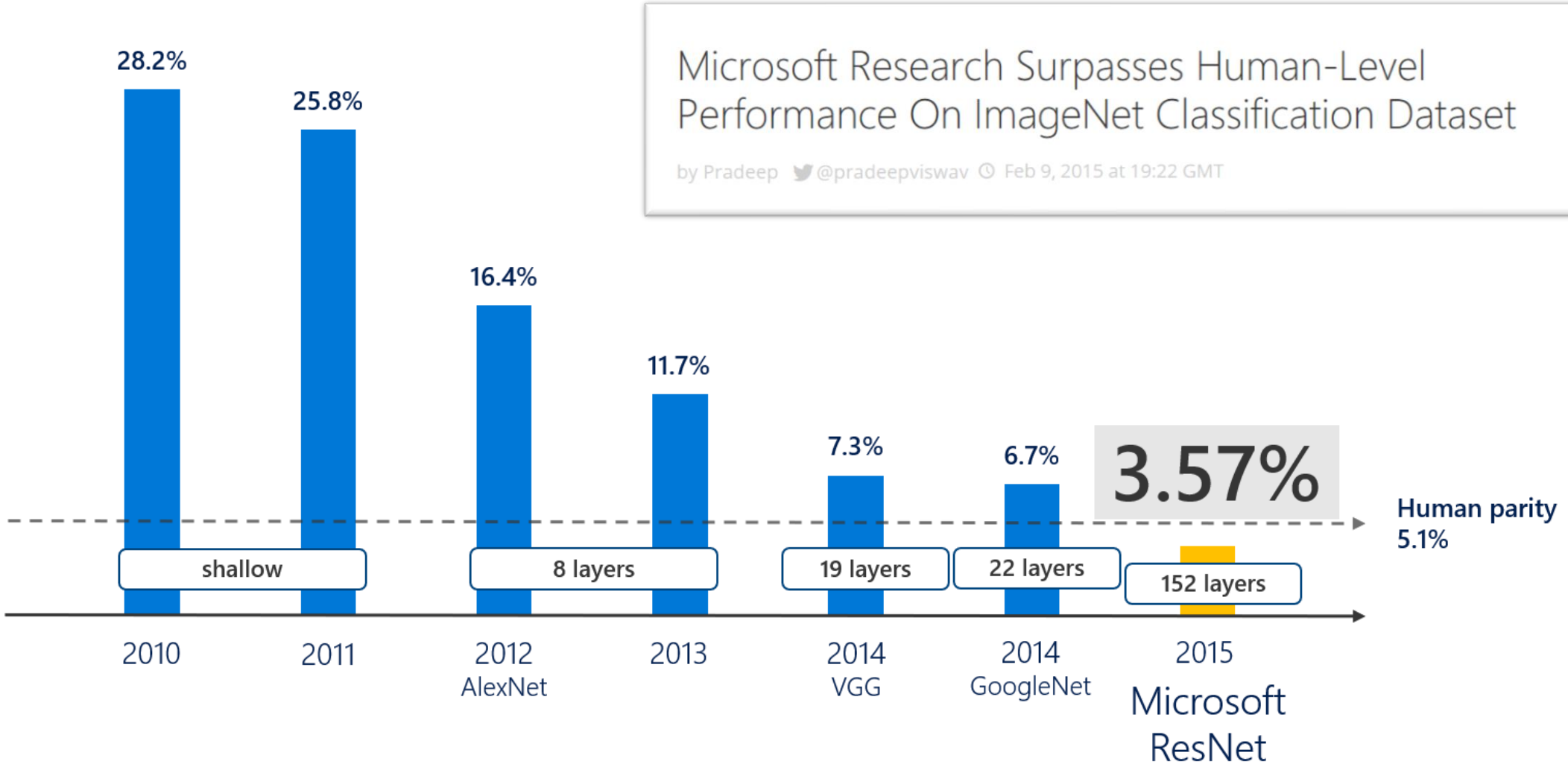


(c) Semantic segmentation



(d) Instance segmentation

Human Parity on Image Classification Task



Applications of Computer Vision


Metropolitan Police
09/06/2016 10:49:34 THU
Camera 2

Vehicle identification

PETROM

TERMOIZOLAT WARMEISOLIERT
THERMO-INSULATED

33 RIV

53 RO-CFR

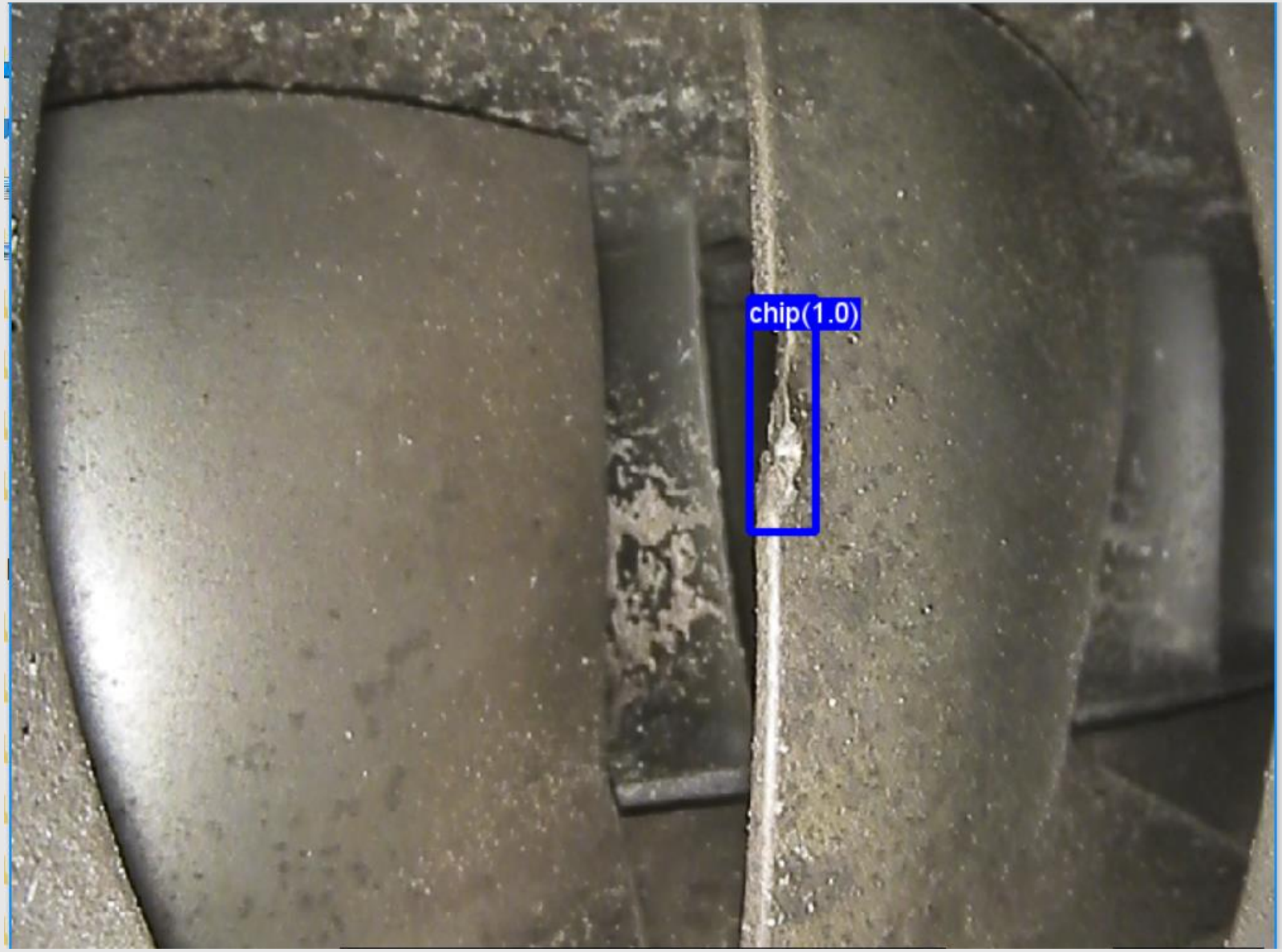
7921 030-5

Zagkks

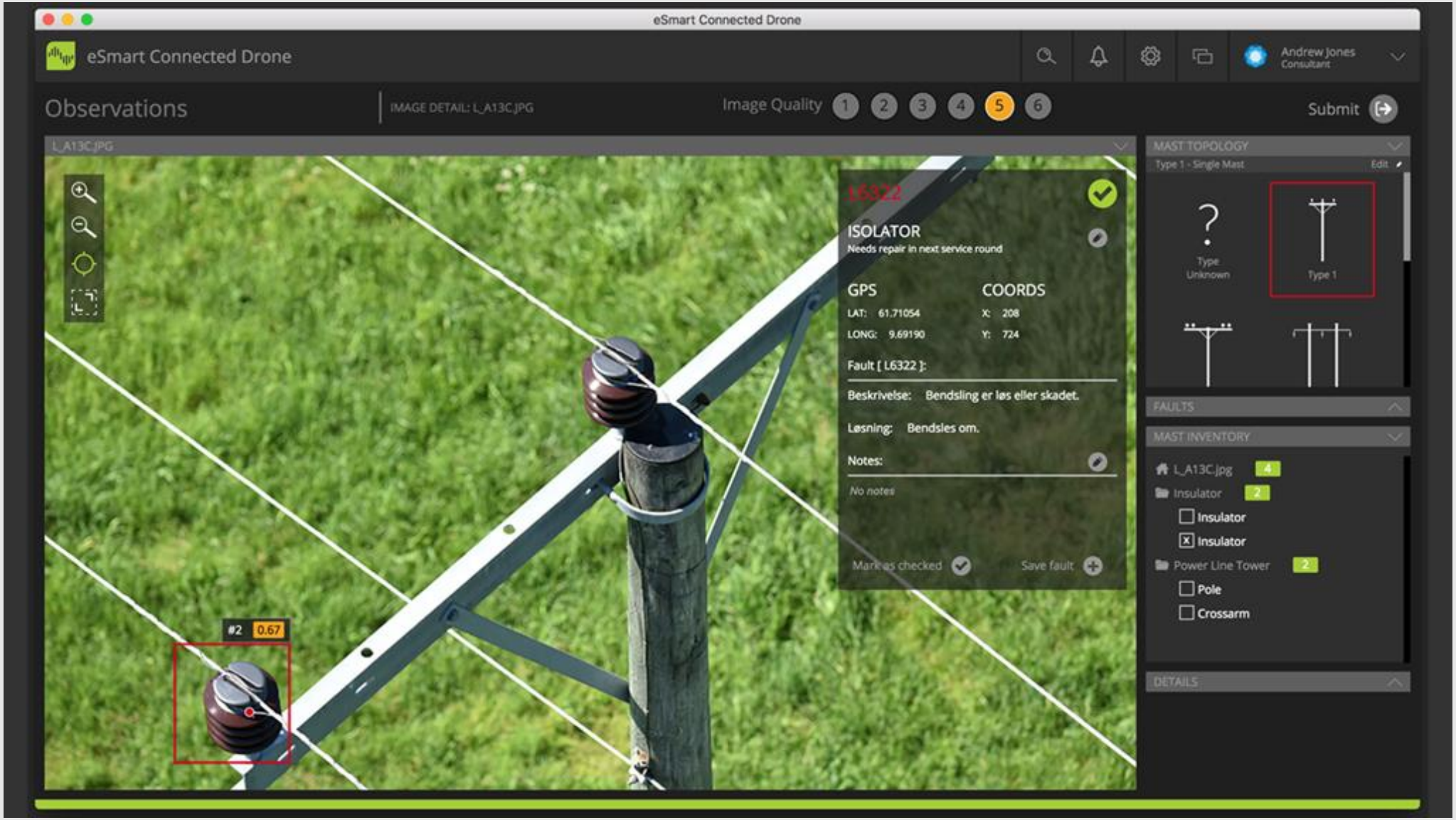
268

1005

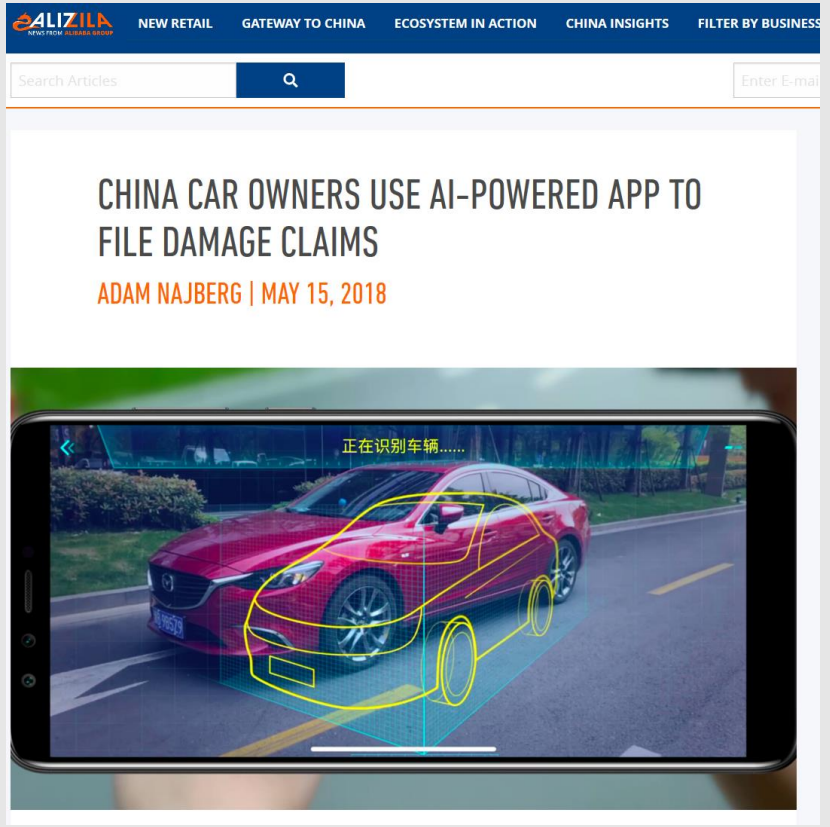
Visual Inspection of Equipment



Visual Inspection of Infrastructure



Visual Inspection of Vehicles

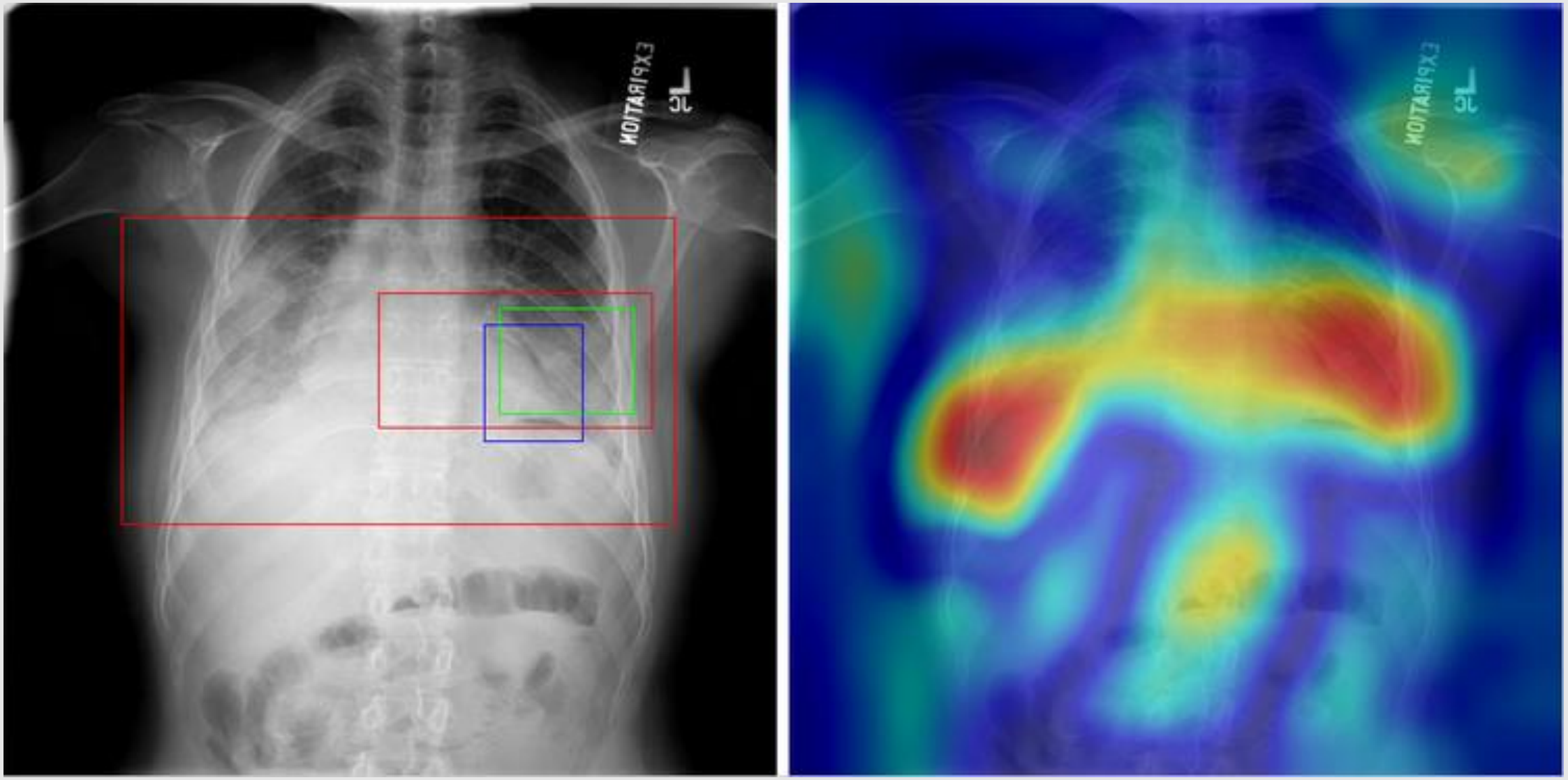


https://www.alizila.com/ai-powered-app-car-insurance/

People Counting

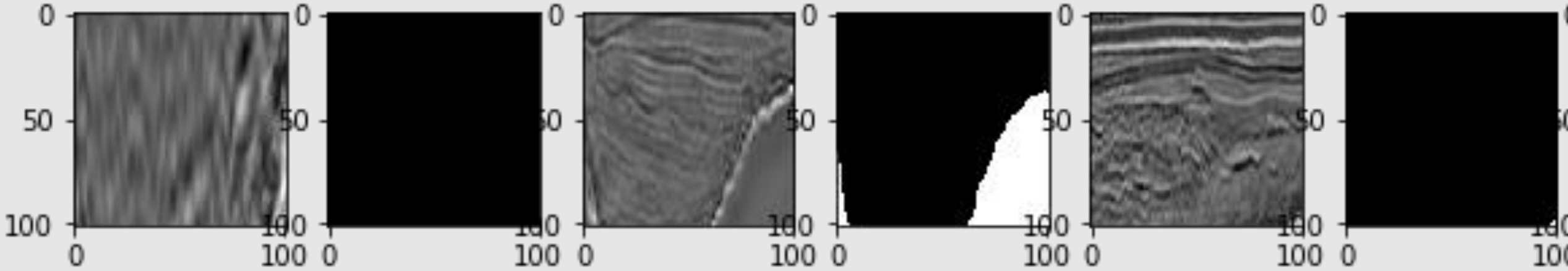
Retail Space Monitoring

Medical Imaging Analysis



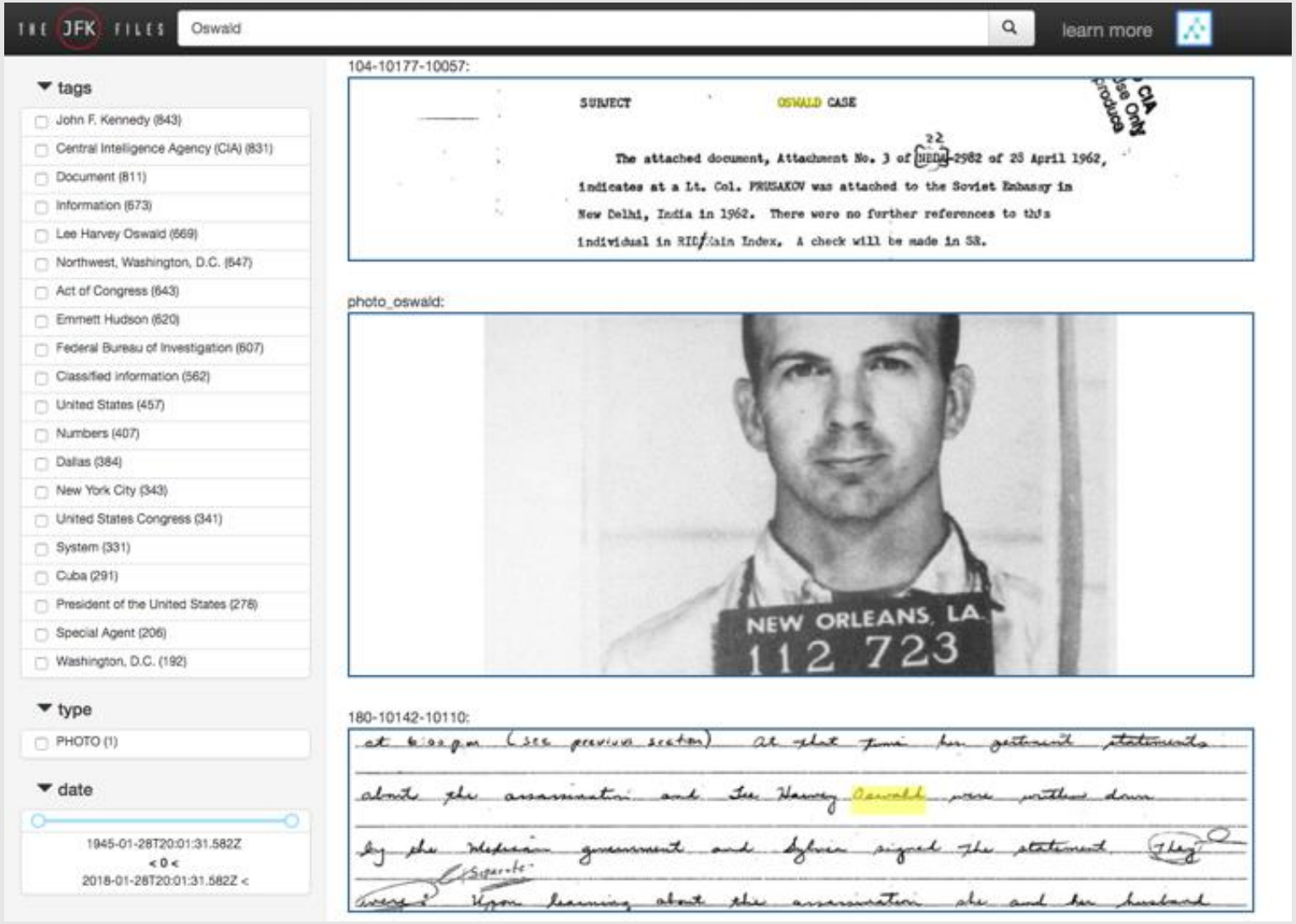
Geological and Seismic Imaging Analysis

https://www.kaggle.com/c/tgs-salt-identification-challenge



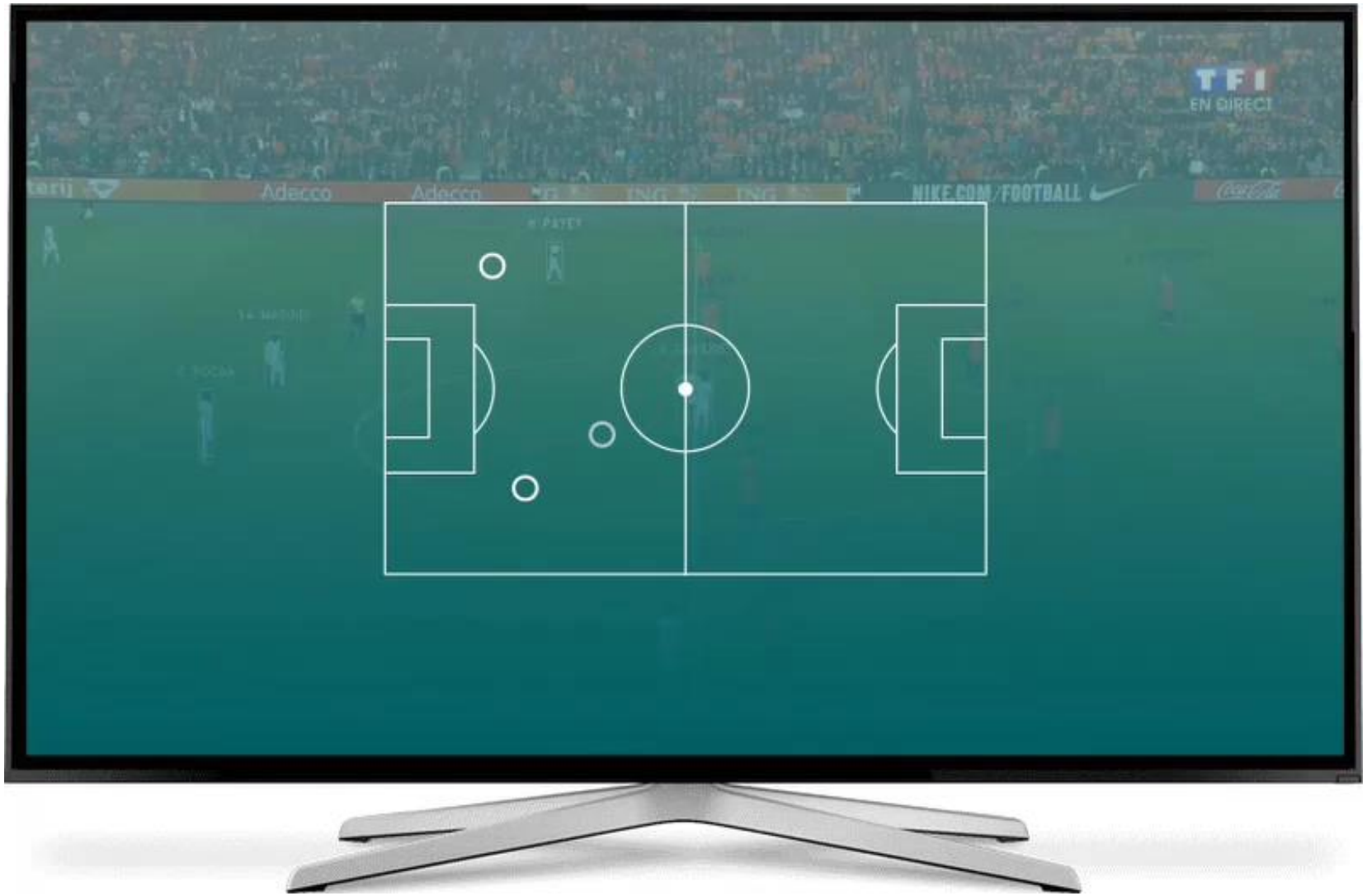
Document Digitization + Cognitive Search

https://aka.ms/jfkfiles



Sports Analytics

https://www.footovision.com/



Seeing AI

http://seeingai.com/

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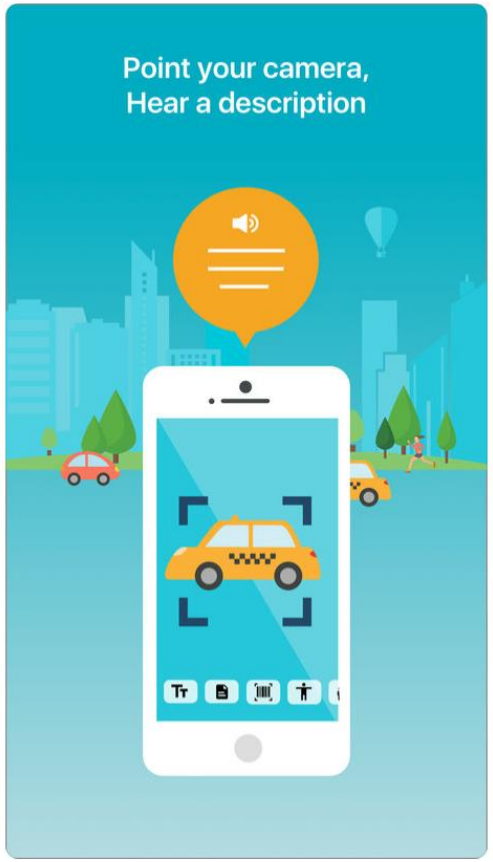
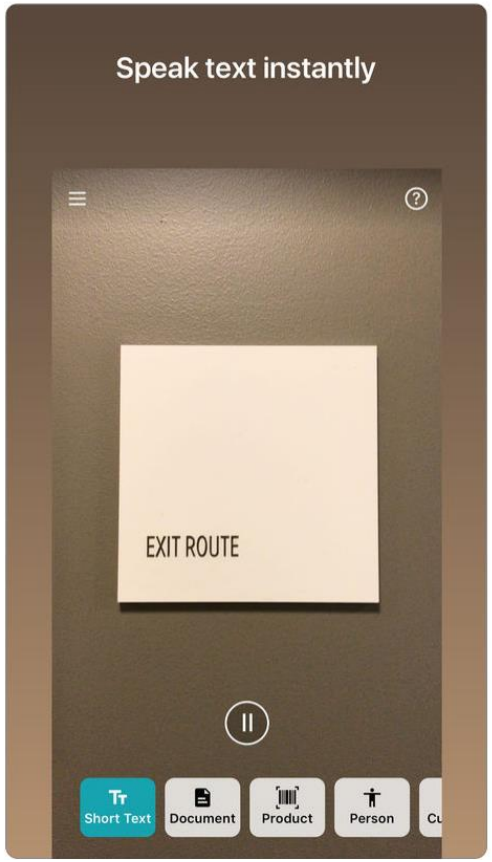




Face Recognition and Verification

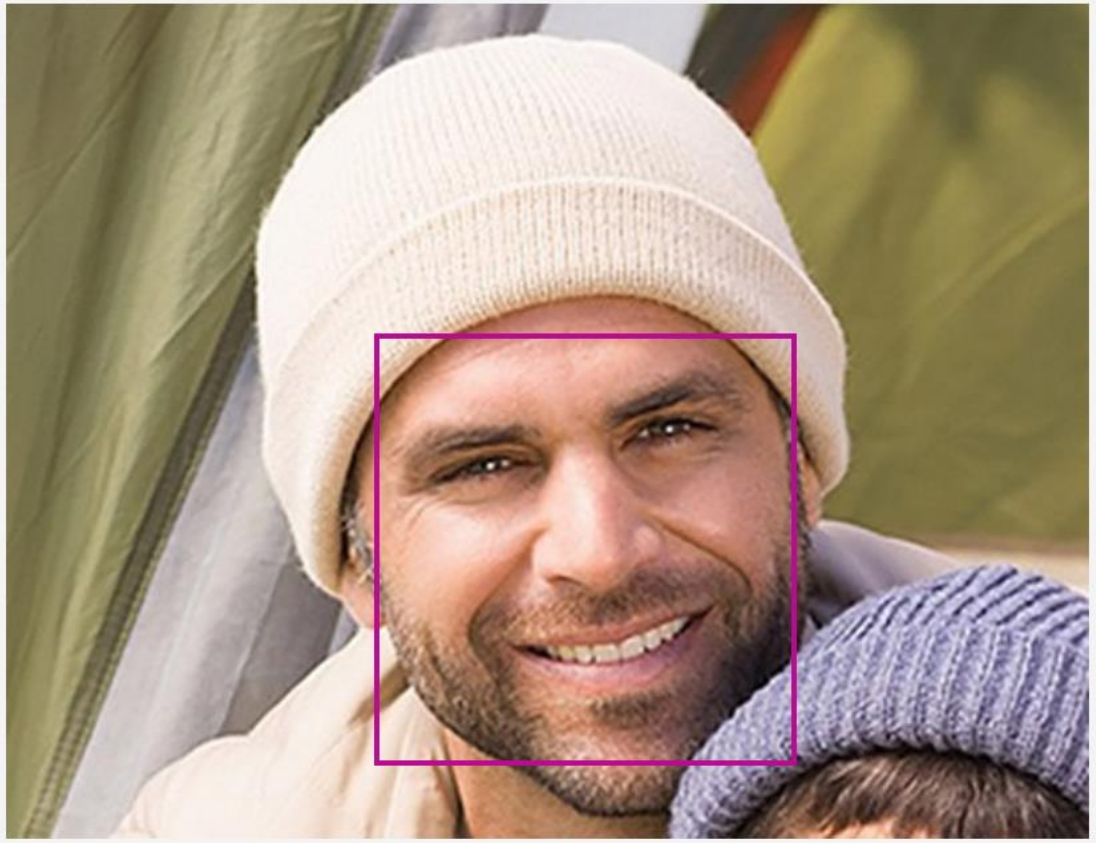


Image URL | Submit | Browse

Image URL | Submit | Browse

Verification result: The two faces belong to the same person. **Confidence is 0.7349.**

Real-Time Video Augmentation

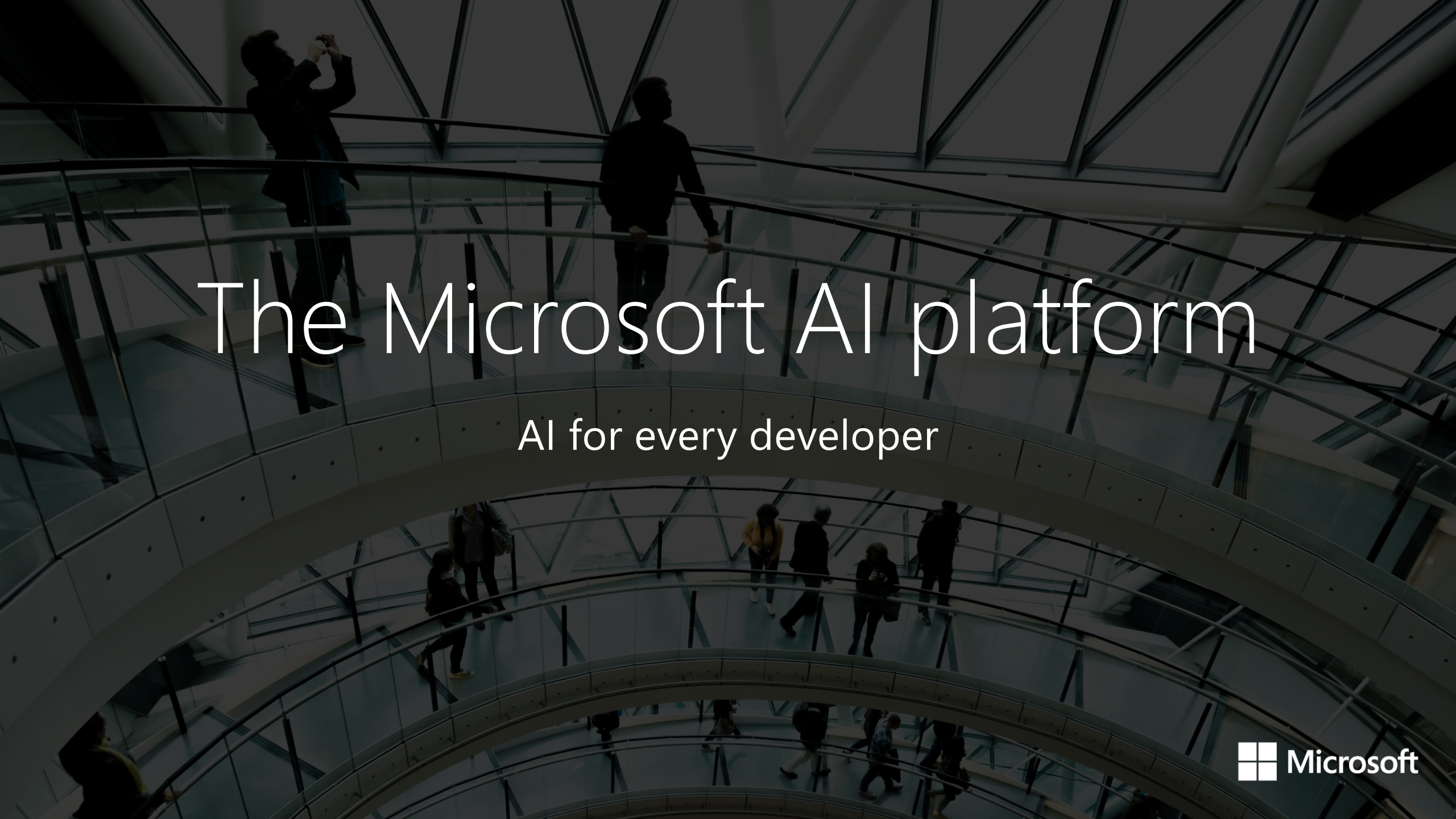
Language to image synthesis

https://drawingbot.azurewebsites.net/

"A bird with **wings that are blue** and a **red belly**"

"this bird is **red with white** and has a very **short beak**"

"A herd of **sheep** grazing on a lush **green field**"


The Microsoft AI platform
AI for every developer
Microsoft

The Microsoft AI Spectrum

Microsoft AI Platform

Azure AI Services

PRE-BUILT AI

Cognitive Services

CONVERSATIONAL AI

Bot Se

CUSTOM AI

Azure Machine Learning

Azure Infrastructure

AI ON DATA

Cosmos DB | SQL DB | SQL DW | Data Lake

AI COMPUTE

ark | DSVM | Batch AI | ACS | IoT Edge

CPU, FPGA, GPU

Tools

CODING & MANAGEMENT TOOLS

VS Tools for AI | Azure ML Studio | Azure ML Workbench

Others (PyChar lotebooks...)

DEEP LEARNING FRAMEWORKS

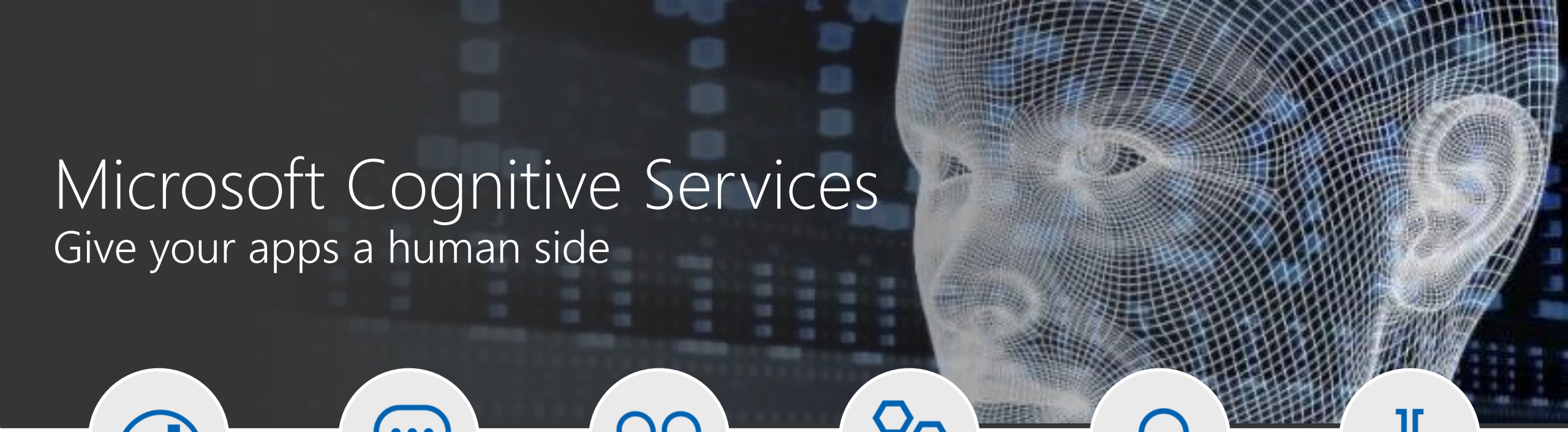
3rd Party

Cognitive Toolkit | TensorFlow | Caffe

Others (Scikit-learn, MXNet, Keras, Chainer, Gluon...)

Microsoft Cognitive Services

Give your apps a human side



Vision

From faces to feelings, allow your apps to understand images and video

Speech

Hear and speak to your users by filtering noise, identifying speakers, and understanding intent

Language

Process text and learn how to recognize what users want

Knowledge

Tap into rich knowledge amassed from the web, academia, or your own data

Search

Access billions of web pages, images, videos, and news with the power of Bing APIs

Labs

An early look at emerging Cognitive Services technologies: discover, try and give feedback on new technologies before general availability

Microsoft Cognitive Services

Customization

The set of cus rvices ava wing cust se their o

Vision

Speech

Language

Knowledge

Search

Labs

Custom Vision Service

Custom Speech Service

Language Understanding

Custom Decision Service

Bing Custom Search

Vision

From faces to feelings, allow your apps to understand images and video

Computer Vision | Video Indexer | Custom Vision | Face | Content Moderator

Custom Vision

A customizable web service that learns to recognize specific content in imagery

Upload images

Upload your own labeled images, or use Custom Vision Service to quickly tag any unlabeled images

Train

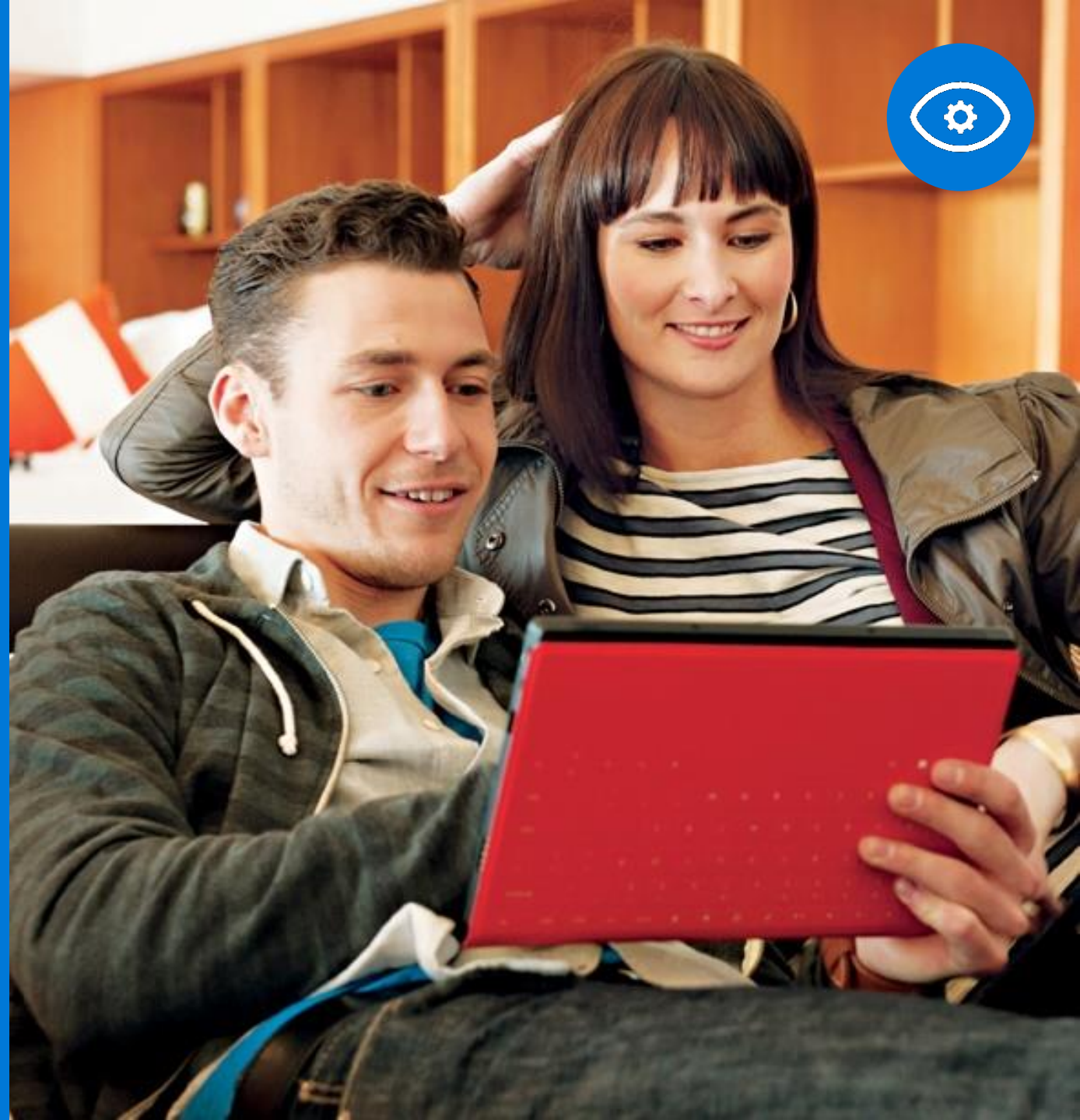
Use your labeled images to teach Custom Vision Service the concepts you want it to learn

Evaluate

Use simple REST API calls to quickly tag images with your new custom computer vision model

Active learning

Images evaluated through your custom vision model become part of a feedback loop you can use to keep improving your classifier

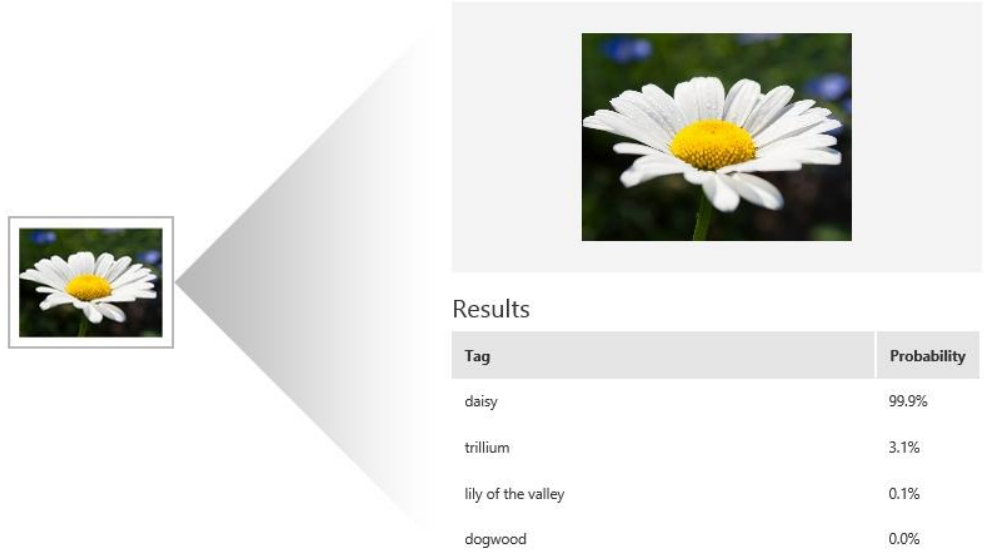


Custom Vision

Customize
Design your own state-of-the-art models for unique use cases

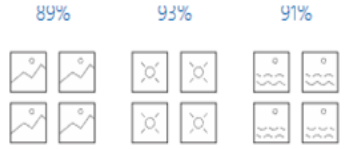
Upload
Use labeled images to quickly train and update your models

Export
Run models on a device or as a Docker container with just one click



Upload Images
Bring your own labeled images, or use Custom Vision to quickly add tags to any unlabeled images.

Train
Use your labeled images to teach Custom Vision the concepts you care about.



Evaluate
Use simple REST API calls to quickly tag images with your new custom computer vision model.

Workshop

Image Classification with Custom Vision

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Thank You