To Hot Dog, or Not Hot Dog?
That is the question...

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CHdO (Chief Hot Dog Officer) @ Microsoft
DevOps Talks Conference – March 2019

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Agenda

1. The “Challenge”
2. Cognitive Developer APIs
3. CI/CD for Cognitive APIs
4. DevOps for PaaS
5. Q&A (at drinks?)
Machine Learning on Azure
Quickly and easily build, train, deploy and manage your models

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<tr>
<th>Domain Specific Pretrained Models</th>
<th>Vision</th>
<th>Speech</th>
<th>Language</th>
<th>Search</th>
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<tr>
<td>To reduce time to market</td>
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<tr>
<th>Familiar Data Science tools</th>
<th>PyCharm</th>
<th>Jupyter</th>
<th>Visual Studio Code</th>
<th>Command line</th>
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<td>To simplify model development</td>
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<th>Popular Frameworks</th>
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<th>Pytorch</th>
<th>TensorFlow</th>
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<td>To build machine learning and deep learning solutions</td>
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<th>Productive Services</th>
<th>Azure Databricks</th>
<th>Azure Machine Learning</th>
<th>Machine Learning VMs</th>
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<td>To empower data science and development teams</td>
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<th>Powerful Infrastructure</th>
<th>CPU</th>
<th>GPU</th>
<th>FPGA</th>
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<td>To accelerate deep learning</td>
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From the Intelligent Cloud to the Intelligent Edge
Sophisticated pretrained models

Infuse apps with powerful, pre-trained AI models

Customize easily and tailor to your needs
Custom Vision

**Customize**
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.

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

Results

<table>
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<tr>
<th>Tag</th>
<th>Probability</th>
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<tbody>
<tr>
<td>daisy</td>
<td>99.9%</td>
</tr>
<tr>
<td>trillium</td>
<td>3.1%</td>
</tr>
<tr>
<td>lily of the valley</td>
<td>0.1%</td>
</tr>
<tr>
<td>dogwood</td>
<td>0.0%</td>
</tr>
</tbody>
</table>

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.
Example Use Cases

Solve business problems that provide high ROI by extending the Intelligent Cloud with an Intelligent Edge that senses and understands 3D space, people, and things.

- Shelf Availability for Retail
- Retail Customer Activity Heatmap and Object Recognition
- Interactive Digital Signage
- Automatic Dimensioning of Pallets and Boxes
- Full Body Tracking with Hololens and VR Headsets
- Facial Recognition for Physical Security
- IOT Central & IOT Edge Device Management
- Azure Machine Learning
- Azure Cognitive Services
- Azure Storage
- Dynamics 365
- PowerBI
Real world models. The confusion matrix.

The more photos of objects in different conditions, the better

Leverage adaptive learning to continuously improve your model

Leverage multi-labels to help with edge-cases and improve accuracy
Azure Custom Vision Demo
Everything as code...

- Machine Learning model creation as code
  - Versioned
  - Reproducible
  - G to the ....... DPR
Custom Vision. Continuously Delivered.

Web application de-coupled from image classifier

Allows for asynch development and testing of front end and classifier,

Teams use the same tools for cross-team visibility.

Leverages super-hyper-advanced, micro-service-architecture & cloud-native service-mesh technology...
...environment variables
Azure Pipelines,
App Service
& Custom Vision Demo
Oprah! Oprah! Oprah!

Everybody gets a Hot Dog!

(ok, not everybody...)
Innovate at scale. Deliver with confidence.

Deliver faster and more reliably with GitHub and Microsoft Azure

Develop
Visual Studio

GitHub
Collaborate

Operate
- Azure Monitor
- Azure Policy
- Azure Automation
- Azure Security Center

Deliver
- Azure Boards
- Azure Pipelines
- Azure Lab Services

Microsoft Azure
Use the tools you know and love

Integrate with your existing tools and workflow
GitHub

Microsoft Azure

Advanced Workloads

Web + Mobile
Internet of Things
Microservices
Containers
Serverless
Identity
Data + Analytics
Artificial Intelligence

Cognitive Services
High Performance Computing

Azure Stack + Hybrid
Summary

1. The “Challenge”
2. Cognitive Developer APIs with Azure Custom Vision
   customvision.ai
3. CI/CD for Cognitive APIs with Azure Pipelines
   github.com/marketplace/azure-pipelines
4. DevOps for PaaS with Azure App Service