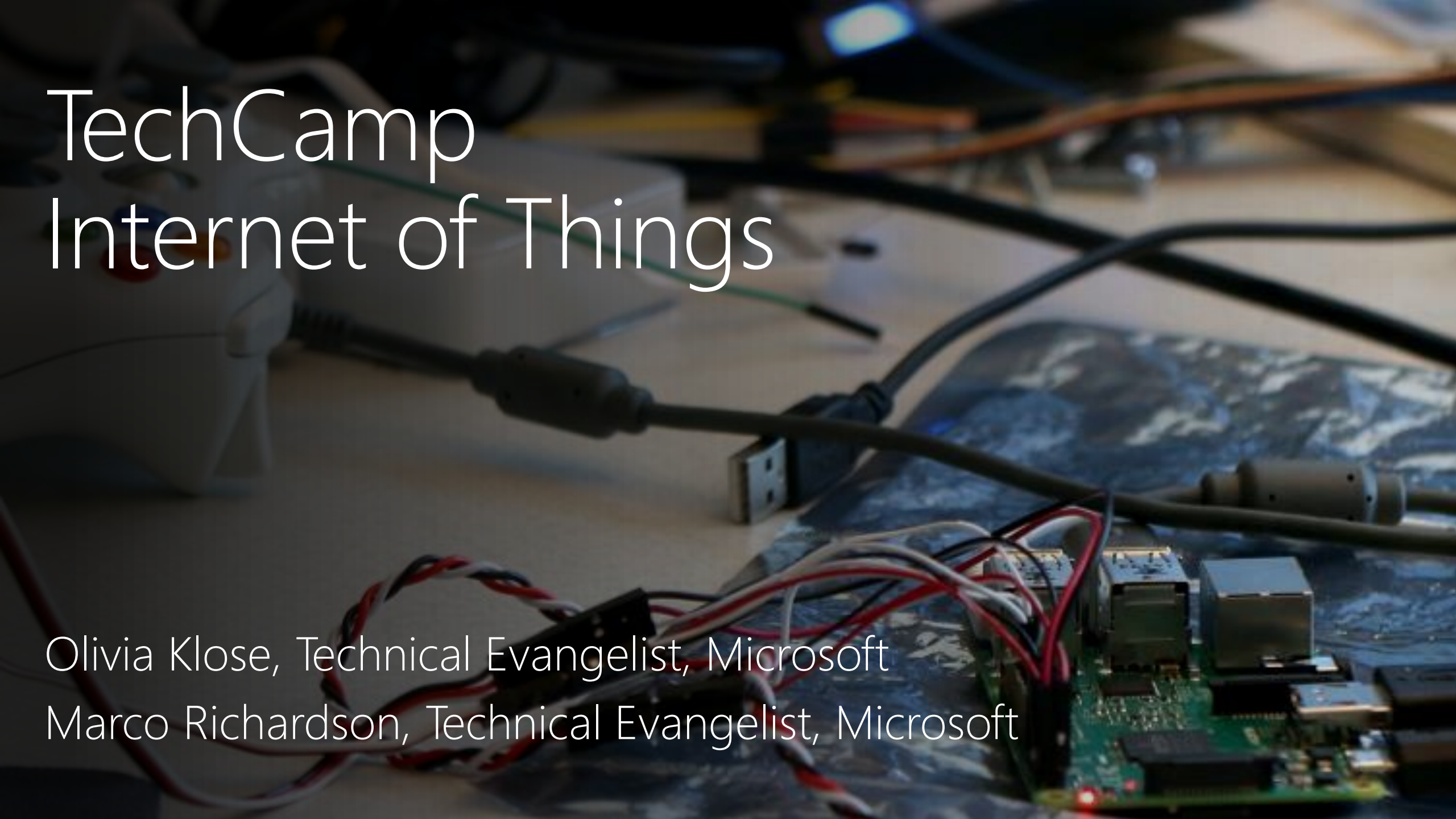
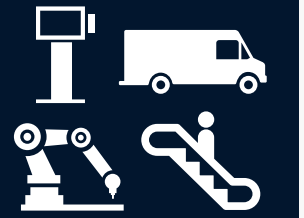


TechCamp Internet of Things

Olivia Klose, Technical Evangelist, Microsoft
Marco Richardson, Technical Evangelist, Microsoft

Defining Internet of Things

Things



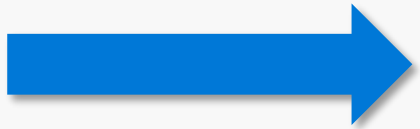
Connectivity

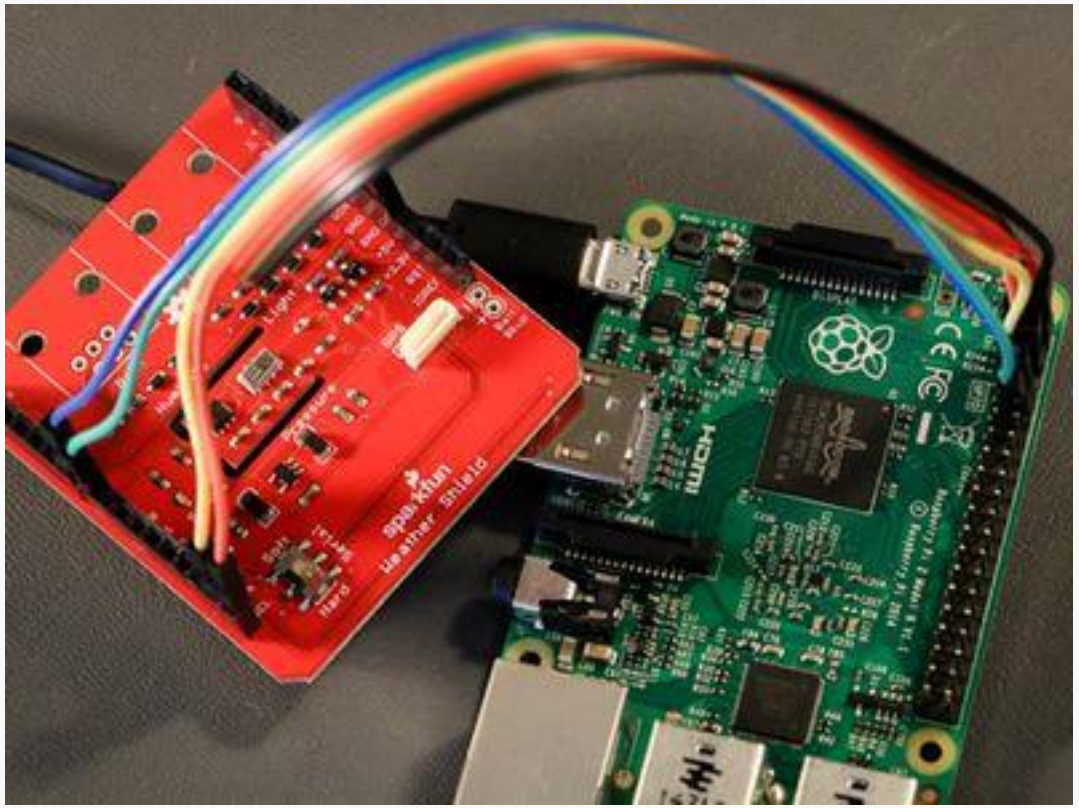
Data

10101
01010
00100

Analytics

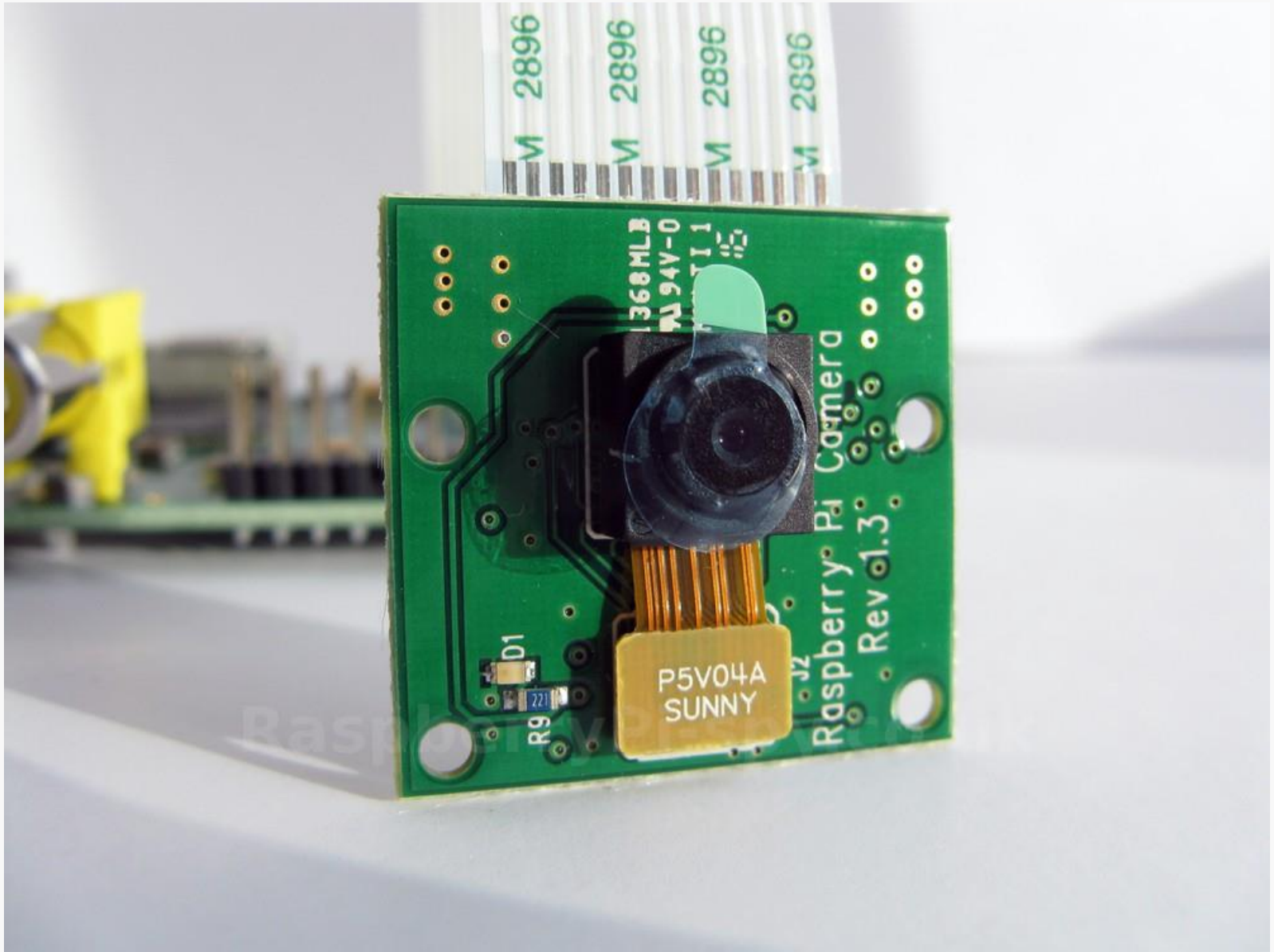
Windows 10 IoT Weather Station





https://www.hackster.io/windowsiot/build-hands-on-lab-iot-weather-station-using-windows-10-5b818f

Raspberry Pi Camera Module



Emotions in the Stadium

Little De-Tour

Cognitive Services

microsoft.com/cognitive

Vision	Speech	Language	Knowledge	Search
Computer Vision	Custom Recognition	Bing Spell Check	Academic Knowledge	Bing Web Search
Emotion	Speaker Recognition	Linguistic Analysis	Entity Linking	Bing Image Search
Face	Speech	Language Understanding	Knowledge Exploration	Bing Video Search
Video	Translator	Text Analytics	Recommendations	Bing News Search
		WebLM		Bing Autosuggest

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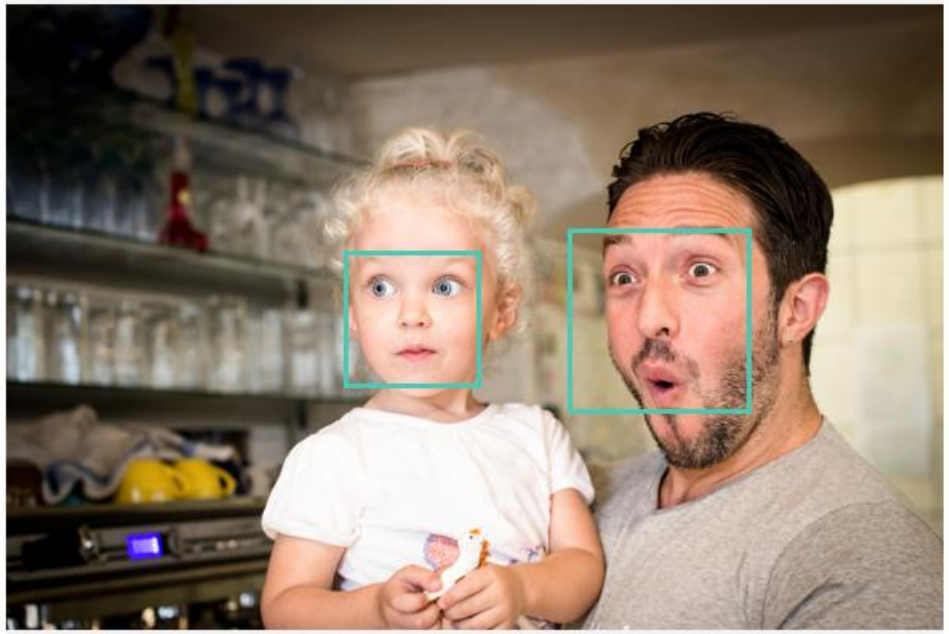
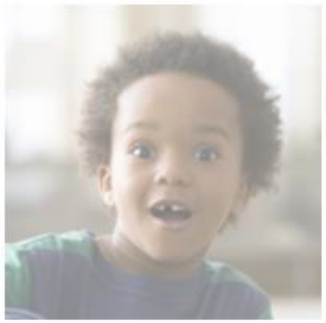


Image URL

```
Detection Result:
2 faces detected

JSON:
[
  {
    "faceRectangle": {
      "left": 479,
      "top": 190,
      "width": 158,
      "height": 158
    },
    "scores": {
      "anger": 0.00001619889,
      "contempt": 0.000121588469,
      "disgust": 0.0000216889184,
      "fear": 0.00138592813,
      "happiness": 0.00001577913,
      "neutral": 0.002224847,
      "sadness": 0.00000300440252,
      "surprise": 0.996211
    }
  },
```



Face APIs

Face Detection
Detect faces and their attributes within an image

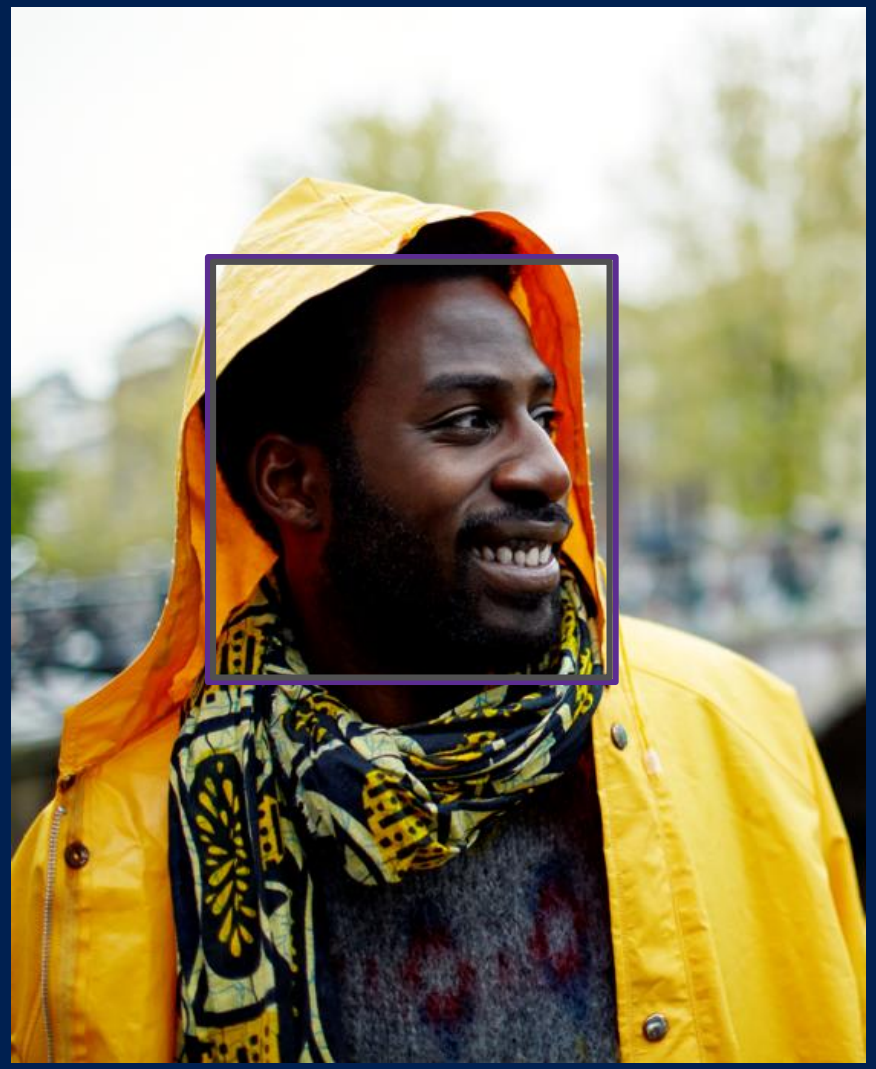
Face Verification
Check if two faces belong to the same person

Similar Face Searching
Find similar faces within a set of images

Face Grouping
Organize many faces into groups

Face Identification
Search which person a face belongs to

Face APIs



Detection

"faceRectangle": {"width": 193, "height": 193, "left": 326, "top": 204}

...

Feature Attributes

"attributes": { "age": 42, "gender": "male",
"headPose": { "roll": "8.2", "yaw": "-37.8", "pitch": "0.0" }}

Grouping

Identification

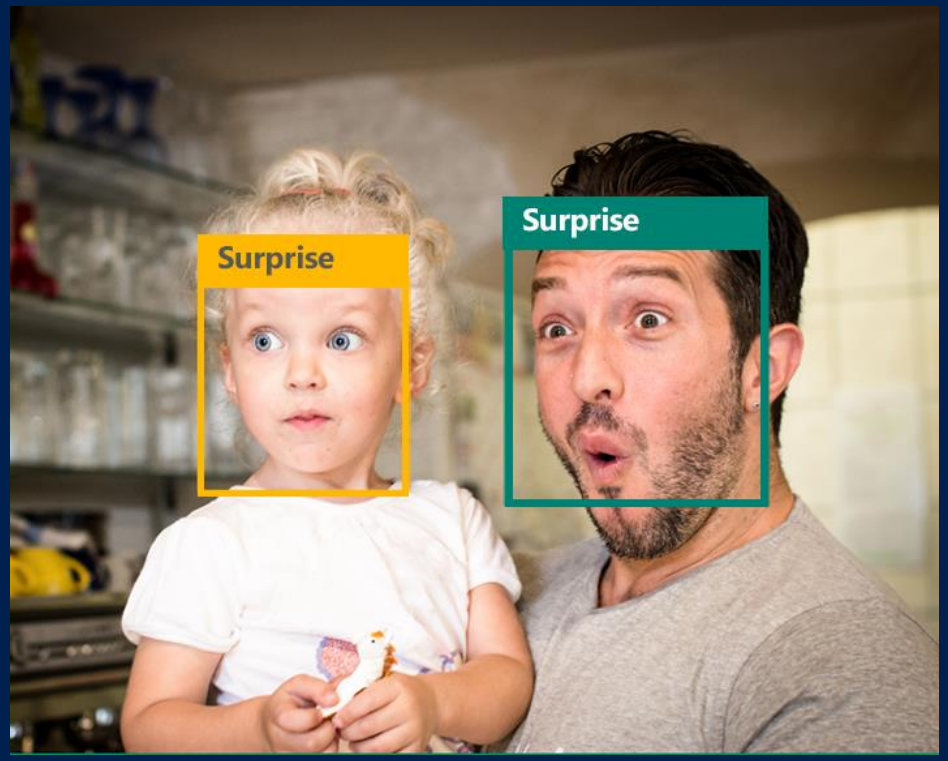
Jasper Williams

Emotion APIs

Recognize Emotions

Detect emotions based on facial expressions

Emotion APIs



Face Detection

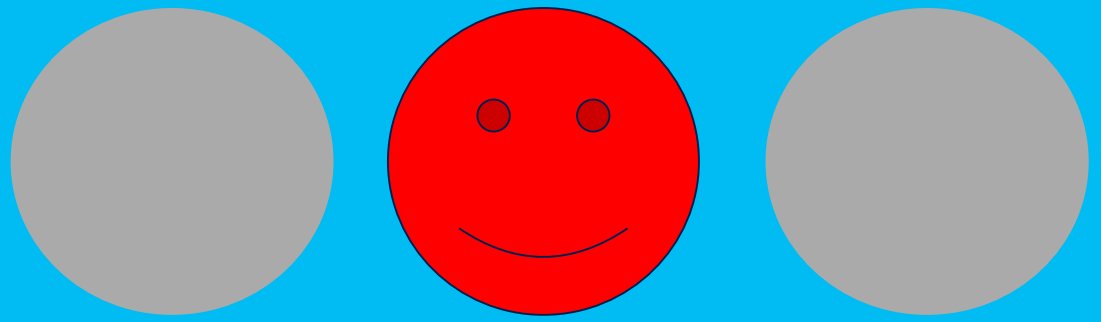
"faceRectangle": {"width": 193, "height": 193, "left": 326, "top": 204}

…

Emotion Scores

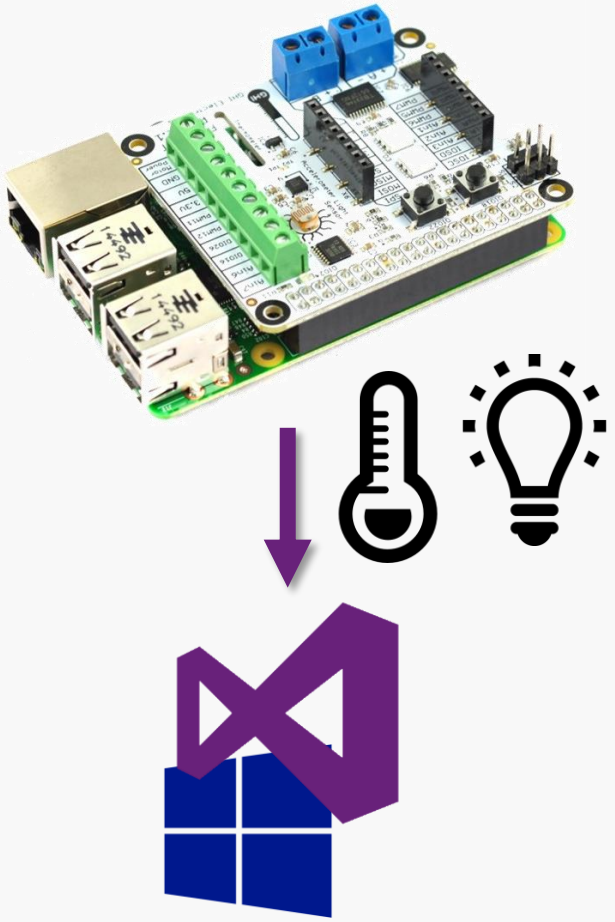
“scores": { "anger": 5.182241e-8,
"contempt": 0.0000242813,
"disgust": 5.621025e-7,
"fear": 0.00115027453,
"happiness": 1.06114619e-8,
"neutral": 0.003540177,
"sadness": 9.30888746e-7,
"surprise": 0.9952837}

Hello UWP!



Hands-on Lab
Lab 3
Read sensor data

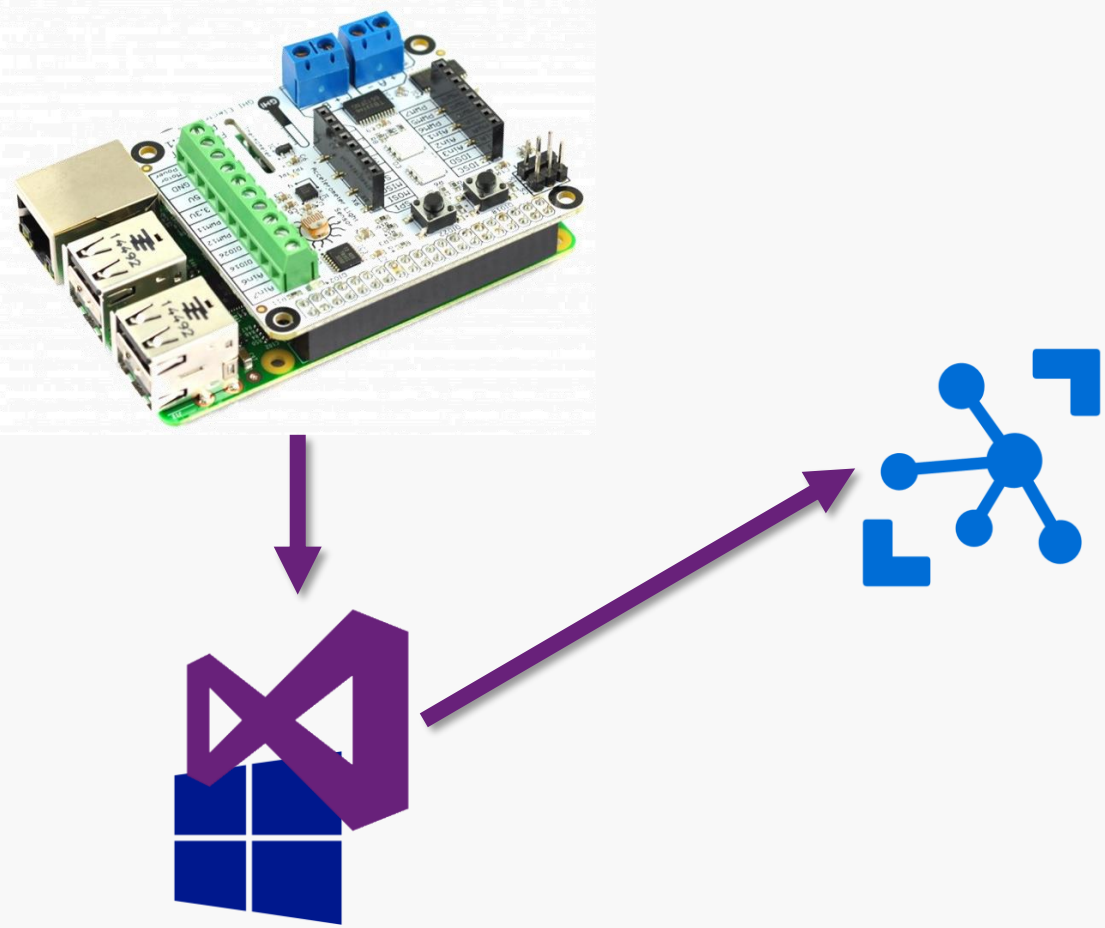
Lab 3: Read Sensor Data (Read FEZ HAT sensors)



Hands-on Lab
Lab 4
Send telemetry data to Azure IoT hub

Lab 4: Sensor Data to the Cloud

Send telemetry data to Azure Event Hub



Microsoft

Further resources

Cognitive Services http://microsoft.com/cognitive