FACE API

Face Detection and Recognition API

The Face API consists of two types of API. Face detection and face recognition. Face detection is the action of locating human faces in an image and optionally returning different kinds of face-related data. Whereas Face recognition describes the work of comparing two different faces to determine if they are similar or belong to the same person.

This API provides four endpoints. Two for face detection and two for face recognition. All these endpoints work for the EAST US region.

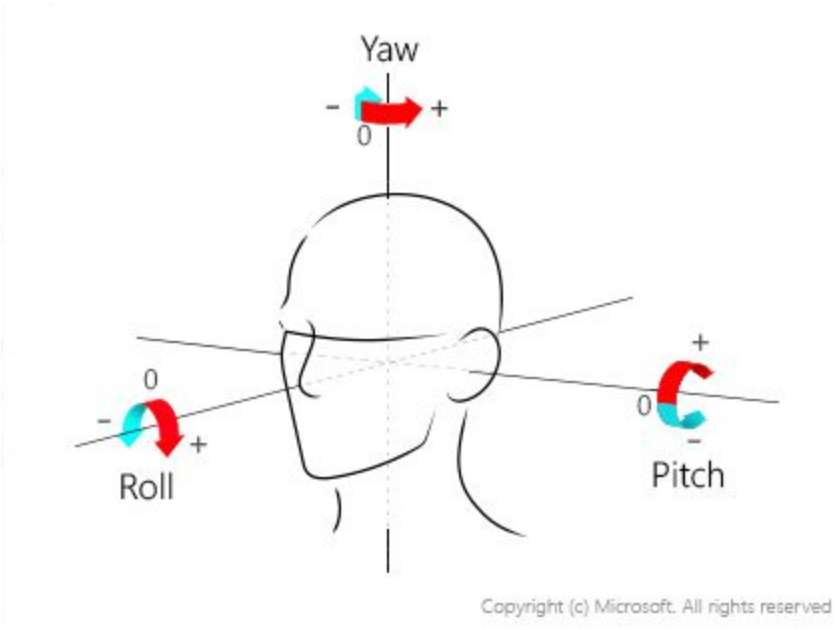
1. **Detect Faces:** This is a face detection API. It detects faces and returns a unique faceId and a faceRectangle for each face. The faceRectangle is a set of pixel coordinates for the left, top, width, and height which mark the located face. The unique faceId is required for face recognition APIs. This API uses a detection model which has a better accuracy for small, side and blurry faces.

   1.1 Input: This API takes an image url as input. Some example inputs are:
   - https://upload.wikimedia.org/wikipedia/commons/c/c3/RH_Louise_Lillian_Gish.jpg
   - https://raw.githubusercontent.com/Azure-Samples/cognitive-services-sample-data-files/master/ComputerVision/Images/faces.jpg
   - https://csdx.blob.core.windows.net/resources/Face/Images/Family1-Dad1.jpg

   1.2 Output:
   This API will return faceIds and faceRectangles for the images in the url. For multiple images, an array of faceIds and faceRectangles is returned. The faceIds will expire in 24 hours after the creation.

   1.3 Remarks:
   - The supported image formats are JPEG, PNG, and GIF.
   - The allowed image file size is from 1KB to 6MB.
   - The minimum detectable face size is 36x36 pixels in an image no larger than 1920x1080 pixels. Images with dimensions higher than 1920x1080 pixels will need a proportionally larger minimum face size.
   - Up to 100 faces can be returned for an image. Faces are ranked by face rectangle size from large to small.

2. **Get Attributes:** This is a face detection API. In addition to basic faceId and faceRectangle, this API returns a few attributes. Some of the results returned for specific attributes may not be highly accurate. Following are the attributes provided by the API:
    - **Age**: The estimated age in years of a particular face.
    - **Blur:** The blurriness of the face in the image. This attribute returns a value between zero and one and an informal rating of low, medium, or high.
    - **Emotion:** A list of emotions with their detection confidence for the given face. Confidence scores are normalized, and the scores across all emotions add up to one. The emotions returned are happiness, sadness, neutral, anger, contempt, disgust, surprise, and fear.
    - **Exposure:** The exposure of the face in the image. This attribute returns a value between zero and one and an informal rating of underExposure, goodExposure, or overExposure.
    - **Facial hair:** The estimated facial hair presence and the length for the given face.
    - **Gender:** The estimated gender of the given face. Possible values are male, female, and genderless.
    - **Glasses:** Whether the given face has eyeglasses. Possible values are NoGlasses, ReadingGlasses, Sunglasses, and Swimming Goggles.
    - **Hair:** The hair type of the face. This attribute shows whether the hair is visible, whether baldness is detected, and what hair colors are detected.
    - **Head pose:** The face's orientation in 3D space. This attribute is described by the pitch, roll, and yaw angles in degrees. The value ranges are -90 degrees to 90 degrees, -90 degrees to 90 degrees, and -90 degrees to 90 degrees, respectively. See the following diagram for angle mappings:



- **Makeup:** Whether the face has makeup. This attribute returns a Boolean value for eyeMakeup and lipMakeup.
- **Noise:** The visual noise detected in the face image. This attribute returns a value between zero and one and an informal rating of low, medium, or high.
- **Occlusion:** Whether there are objects blocking parts of the face. This attribute returns a Boolean value for eyeOccluded, foreheadOccluded, and mouthOccluded.
- **Smil:** The smile expression of the given face. This value is between zero for no smile and one for a clear smile.

2.1 Input: This API takes an image url as input. Some example inputs are:

- https://upload.wikimedia.org/wikipedia/commons/c/c3/RH_Louise_Lillian_Gish.jpg
- https://raw.githubusercontent.com/Azure-Samples/cognitive-services-sample-data-files/master/ComputerVision/Images/faces.jpg
- https://csdx.blob.core.windows.net/resources/Face/Images/Family1-Dad1.jpg

2.2 Output:

This API will return faceIds and faceRectangles along with the attributes for the images in the url. For multiple images, an array of faceIds and faceRectangles is returned. Only the attributes for which the value is set be true are returned.

2.3 Remarks:

- The supported image formats are JPEG, PNG.
- The allowed image file size is from 1KB to 6MB.
- The minimum detectable face size is 36x36 pixels in an image no larger than 1920x1080 pixels. Images with dimensions higher than 1920x1080 pixels will need a proportionally larger minimum face size.
- Up to 100 faces can be returned for an image. Faces are ranked by face rectangle size from large to small.

3. **Find Similars:** This is a face recognition API. It detects similar looking faces. It operates on two modes which are matchPerson and matchFace.
   The “matchPerson” mode tries to find faces of the same person as possible by using internal same-person thresholds. It is useful to find a known person's other photos.

The “matchFace” mode ignores same-person thresholds and returns ranked similar faces anyway, even if the similarity is low.

3.1 Input: This API has following input parameters:

- faceId = This is the face id for which we need to find similarity. This face ID comes from one of the face detection APIs and expires after 24 hours of its creation.
- faceIds = This is an array of faceIds from which the above face id is to be matched. These Ids also come from one of the face detection APIs and expire in 24 hours after their creation.
- maxNumOfCandidatesReturned = This is the number of top similar faces returned. The valid range is [1, 1000].
- mode = Similar face searching mode. It can be "matchPerson" or "matchFace".

3.2 Output:

The API returns an array of faceIds and the confidence of similarity. For the mode “matchPerson”an empty list will be returned if no faces pass the internal thresholds.

3.3: Remarks:

FaceIds retrieved from face detection APIs used as input for this API expire in 24 hours after the creation. Invalid faceIds will result in incorrect requests. In that case use the detection API again to generate the faceIds.

4. **Verify:** This API verifies whether two faces belong to the same person. It takes two faceIds as input. The faceIds are created using the detection API.

4.1 Input:

This API takes two faceIds, faceId1 and faceId2 as input. These IDs are generated using the face detection API.

4.2 Output:

This API returns a single object which tells if the two faces are identical or not with a confidence value.

4.3 Remarks:

- FaceIds retrieved from face detection APIs used as input for this API expire in 24 hours after the creation. Invalid faceIds will result in incorrect requests. In that case use the detection API again to generate the faceIds.

- Higher face image quality means better identification precision. Please consider high-quality faces: frontal, clear, and face size is 200x200 pixels (100 pixels between eyes) or bigger.

Few more sample Image URLs:

- https://csdx.blob.core.windows.net/resources/Face/Images/Family1-Son1.jpg
- https://csdx.blob.core.windows.net/resources/Face/Images/Family2-Lady1.jpg
- https://csdx.blob.core.windows.net/resources/Face/Images/Family2-Man1.jpg
- https://csdx.blob.core.windows.net/resources/Face/Images/Family3-Lady1.jpg
- https://csdx.blob.core.windows.net/resources/Face/Images/Family3-Man1.jpg
- https://csdx.blob.core.windows.net/resources/Face/Images/findsimilar.jpg