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Azure Face Detection

Cognitive Services: Computer Vision

Concepts

ML Technique to analyze human faces

- Locate and analyse human faces in images/video
- **Face detection:** ID regions of image with human face & return bounding box coordinates
- **Facial analysis:** Return additional information (facial landmarks: nose, eyes, eyebrows and lips) and used to infer age or emotional state, wearing glasses/masks
- **Facial recognition:** Identify known individuals from facial features. Use multiple images to train model for identification

Services

MS AZ Computer Vision

- Subset of Analyze Image of Computer Vision
- No ML expertise required
- Computer Vision: Basic analyses (age)
- Video Indexer: Faces in videos
- Face: Widest range of capailities
  - Identify API: One-to-many face match
  - Verify API: One-to-one face match
  - Group API: Similartiy face match

Use Cases

- **Security:** unlock doors or smart devices (toucheless access control)
- **Social media:** tag friends in photographs
- **Intelligent monitoring:** drivers looking at road/mobile device/tired
- **Advertising:** direct advertisements to appropriate demographic audience
- **Missing persons:** public camera systems, facial recognition to ID missing person in the frame
- **Identity validation/verification:** Port of entry determine if person holds correct permit
- **Similar faces:** Find similar faces during a search

Build an ML Model

Step 1: Provision a Resource

- Face (CV) resource: Dedicated training/ prediction or both resources. Use CV only, or manage access/ utilization/ tracking/ billing of resource separately. Cannot use authentication key/ service endpoint interchangeably.
- Cognitive Services (CS) resource: Dedicated training/ prediction or both resources. Combine Custom Vision or other services, or manage access/ utilization/ tracking/ billing of resource together. One endpoint and authentication key for resources.
- Provide client application authenticaion key and HTTP address endpoint for ML service consumption

Features

Face Supports

- Face detection, verification, find similar faces, group faces based on similarities & identify people
- Age, blur, emotion, light exposure, facial hair, glasses, hair, head pose, makeup, visual noise/clarity, occlusion, smile

Performance

Improve accuracy

- JPEG, PNG, GIF and BMP images
- < 6 MB
- 36 x 36 to 4096 x 4096 pixel faces
- Limit extreme face angles, occlusions (objects blocking face), preferably full-frontal face image