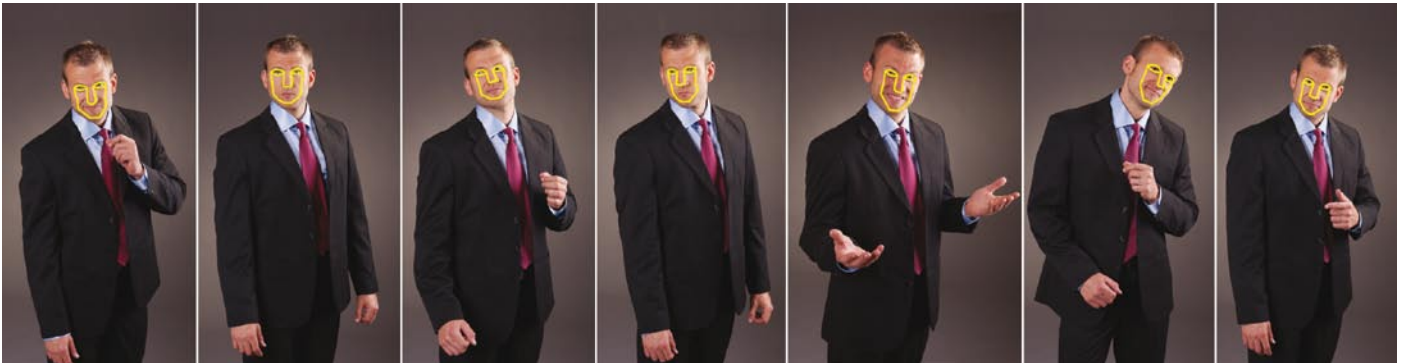




faceAPI

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faceAPI.com

The Real-Time Face Tracking Toolkit for Developers and OEMs



Technical Specifications

faceAPI allows you to integrate Seeing Machines world-class face-tracking technology into your product or software application. Now available under both development and production licenses, faceAPI provides your development team with the ability to quickly incorporate ultra-reliable face-tracking, with no image-processing or computer vision expertise necessary.

faceAPI is the only comprehensive, commercially supported solution for developing products that leverage real-time face-tracking.

Features

- Highly robust, real-time, 6 degree-of-freedom (3D) monocular face tracking
- Able to track up to +/- 90 degrees of head rotation and fast head movements
- Optional real-time tracking of lips and eyebrows
- Face-texture "mugshot" delivery upon tracking commencement
- Two types of head-trackers, trading CPU load for tracking capability.
- Requires only 8-bit greyscale video input. Algorithms do not rely on color and are therefore able to track faces in the dark using infra-red illumination
- Automatic tracking startup and immediate reacquisition when face is hidden then shown
- Facial feature detection and tracking – locates facial feature "landmarks" from a single image or real-time for video sequences
- Designed for all human faces (it doesn't matter what you look like). Robust to occlusion, fast movement, large head rotations, lighting changes, dimly lit rooms, facial deformation, skin color, beards, glasses etc
- Can track with as few as 40 pixels across the face (typically 2m from a VGA camera)
- Works with any webcam or video file
- Full control over all tracking parameters for purposes of software integration
- Low-level image input interface for custom camera integration
- "Offline" tracking algorithm for high-quality tracking of faces in movie files where real-time performance is not required
- Separate low-level "face-search" algorithm for finding multiple faces in images and short image sequences. This algorithm has three "depth" levels, with level 0 providing fast results to level 2 which accurately locates facial features and estimates head-pose in 3D.

Technical Details

At the heart of faceAPI lies a number of sophisticated multi-threaded tracking "engines". Each engine appears as a "black-box" with a minimal set of C functions that allow the developer to tune engine behaviour and performance.

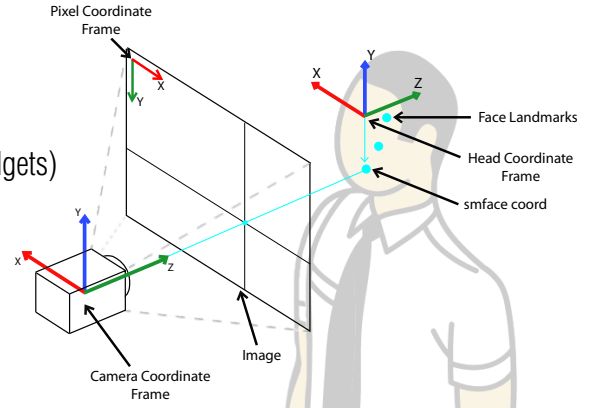


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The API is provided as a closed-source library consisting of:

- C header files
- A DLL binary
- Concise HTML documentation
- Several sample applications (including a full game engine demo)
- A set of open-source object-oriented wrapper classes (C++ and Qt widgets)
- A tool for calibrating camera lenses (enabling precision tracking)
- A command-line tool for tracking faces in movie files
- Redistributable third-party APIs required for installation



faceAPI can track with a variety of video inputs:

- Webcams, or any WDM compatible camera (DirectShow driver)
- PointGrey Flea, Flea2 or Firefly MV cameras (recommended for high-performance applications)
- Movie files. Can read Windows avi or Apple Quicktime files.
- Low-level "shared-memory" image interface (allows for integration of custom video devices).

The tracking engine provides:

- Methods to "call back" your application whenever a new tracking measurement occurs
- A function that sets the current estimate of head-pose into a C structure (interpolates between samples)
- Head-pose measured in cartesian 3D coordinates relative to the camera, (X,Y,Z). Position is in meters and rotation is expressed in euler angles (rads).
- Positions of key facial locations (face-landmarks) including lip and eyebrow points, expressed in "face-coordinates" (inside the face, independent of head-pose)
- "Mugshot" face-texture is provided via a function callback that occurs when the face starts tracking. This texture is 256x256 resolution in RGB color format and is a synthetic orthographic projection of the front of the face. Face outline (texture-mask) points are provided with the texture.
- Head-pose measurements include a confidence weighting, from 0 to 1, allowing your application to determine when tracking quality is acceptable
- Latency of measurement is ~11ms (processing time) + exposure time. Eg, for a 30Hz camera, latency = ~44ms

Licensing

Non-Commercial, Development and Production license options now available.

Please contact us at bizdev@seeingmachines.com for more information on pricing, licensing and distribution.

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