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Armatura FacePro Android SDK

Overview

Armatura FacePro Android SDK (AKA FacePro SDK) is a pure software development toolkit running on general or custom Android devices which have built-in digital camera or external web camera, such devices can be Android smartphones, tablets or handheld devices.

FacePro SDK is built on deep learning-based computer vision technologies, delivers face analytics and face recognition functionalities on captured human face images, enables the applications to track, analyze and recognize the human face with high speed and accuracy.

With the rich interfaces provided by FacePro SDK, the integrator/developer can enable face recognition features on Android App, including detecting face, tracking face, analyzing face-attributes, detecting live person face from the digital camera and performing face registration and authentication as well.

FacePro SDK encapsulates the deep learning algorithm details and makes the function calls transparent to upper-level applications. It provides intuitive, developer-friendly and self-contained interfaces to developers for agile integration development. FacePro SDK can be applied to a wide range of software applications where mobile authentication is required, such as identity management, single sign-on, digital signature and more.

Features

Powered by cutting-edge Artificial Intelligence computer vision technologies, FacePro algorithms enable face analytics and face recognition performed on Android devices in high speed and high accuracy.

General speaking, server-based face algorithms rely on powerful and expensive GPU processor; embedded face recognition technology is locked by third party hardware, not applicable for mobile apps. In comparison, FacePro Android SDK has big advantages over both server-based and embedded solutions and benefits mobile apps with biometric solution.

FacePro Algorithm can detect the face landmarks, calculate the coordinates of the key facial feature points (including eyes, eyebrows, mouth, nose and face contours) and capture the facial texture. With the deep-learning face models trained by large-volume face data, the face algorithm utilizes the collected information to evaluate face liveness, detect face mask/glasses/hat, estimate the age, emotion, identify the gender and identify the face.

The features provided by FacePro Algorithm:

- High-Speed and High-Accuracy Face Recognition

Based on multi-level matching approach, FacePro Algorithm selects robust face feature points along with optimized classification parameters to achieve high-speed large-scale face recognition with high accuracy in less than half second.

- Multi-Person Tracking from Single Image

FacePro Algorithm can track multiple human faces and analyze the face attributes from one single image.

- Face Attribute Analysis

FacePro Algorithm enables the face analysis on anonymous person, the analytic information includes the gender identification, age estimation, facial expression recognition, facial mask/glasses/hat detection. The algorithm can capture the exaggerated facial expressions in high accuracy, like laughing with open mouth, raising eyebrows, closed eyes and frowning.

- Highly Adaptable to Face Postures

FacePro algorithm supports the face detection and recognition in wide range of face poses (pitch, yaw and roll up to 30°), makes it suite to capture and recognition the human face in wide or uncontrolled environments.

- Highly Accurate Liveness Detection

With built-in deep learning liveness model, FacePro algorithm can effectively detect a fake face from a digital photo, printed color or Black & White face photo, or a recorded video of live face, and well protect the biometric authenticated applications from forgery attack.

Algorithm and SDK Specifications		
SDK Name	Armatura FacePro Android SDK	
SDK Size	Android Jar Lib	<100MB
Minimal Image Size	128 * 128 (pixel)	
Pose Range	Yaw ≤ 30°, Pitch ≤ 30°, Roll ≤ 45°	
Template Size	256 bytes	
Performance*	Face Detection Time	< 50ms
	Template Extraction Time	< 350ms
	Identification Time	< 100ms
Match Mode	1:1 for verification, 1:N for identification	
1:N Capacity	100,000 templates	
Accuracy**	TAR >= 99.2% when FAR = 0.001%	
Operation System	Android	Android 4.1 and above
Programming Language	Java	

Note:

[*] The algorithm is assessed on Intel® Core™ i5-3210M, 2.5GHz processor and 8GB DRAM.

[**] The accuracy is assessed on the proprietary infrared light face image data set.

TAR: True Acceptance Rate, FAR: False Acceptance Rate.

ARMATURA

Address:190 Bluegrass Valley Parkway, Alpharetta, GA 30005
Phone: +1 (470) 816-1970
Email: sales@armatura.us
Website: www.armatura.us