

## Face Recognition



CyberExtruder is pleased to announce the availability of its version 5.8 facial recognition Software Developer's Kit (SDK). This release represents a significant advance in the state of the art for facial recognition. This release combines Aureus 3D's patented 2D/3D pose correction technology with deep convolutional neural network algorithms. You can now realize unparalleled facial recognition performance allowing the opportunity to deliver the industry's highest performing face matching solutions to your customers and gain access to new and emerging markets.

This latest Aureus 3D product release is uniquely suited for:

- Facial identification in real time video surveillance applications
- Low resolution images and video
- Bookmarking and retrieval of facial sequences archival video
- Comprehensive understanding of faces in crowds
- Wearable face matching solutions

Aureus 3D version 5.8 delivers significant performance increases over algorithms previously documented in NIST's 2013 MBE testing. The ability to handle non-front facing images and real-time video, faces that are partially occluded and low-resolution video enable superior matching accuracy in uncontrolled environments. In addition to still image and video sequence applications, Aureus 3D version 5.8 delivers outstanding results in applications where both the subject and camera are in motion such as body worn cameras.

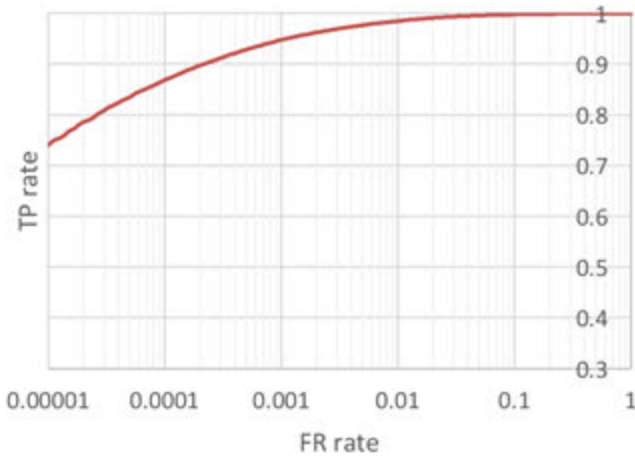
The highlights of Aureus 3D version 5.8s performance include:

- 99.44% Rank 1 matching accuracy on FERET high pose data set
- 97.60% Rank 1 matching accuracy on Labeled Faces in the Wild data set
- 42% Better True Positive rate (@ 0.1 False Positive) over 'state of the art' matcher on LFW'
- Matching speed of 25 million matches per second (.040 microsecond)
- Template size of just 128 bytes

CyberExtruder is very proud of its ability to deliver both superior and relevant face recognition solutions with results measured in both speed, accuracy and end user ROI. Our full suite of 2D/3D facial recognition products are built upon our patented, industry-leading Aureus 3D face recognition algorithms. Aureus 3D is capable of using images and video evidence of varying quality and file types to provide forensic and real-time operational surveillance solutions.



## LFW ROC



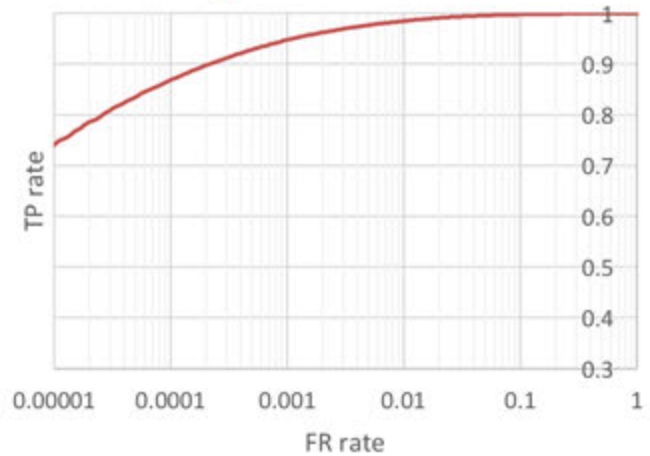
1% FP RATE	0.1% FP RATE	RANK 1 TEST
98.50%	94.67%	97.60%

### The Labeled Face in the Wild Dataset



The Labeled Faces in the Wild dataset contains more than 13,000 images collected from the web. Our test results presented here are based upon a closed set test (every image compared to every other images). The test set consisted of every person with 2 or more images for a total of 9,126 images and more than 83.2 million comparisons.

## FERET High Pose ROC



1% FP RATE	0.1% FP RATE	RANK 1
98.83%	95.63%	99.44%

### The FERET Dataset



The FERET dataset is a curated collection of images of 957 individuals in quarter, half and full profile poses. For our closed set testing we selected the subset of high pose (quarter and half profiles but excluded full profiles) for a total of 7,830 images producing more than 61.3 million comparisons.

## Aureus 3D FR v5.8 Specifications

Technology	
Automatic Feature (Eye, Nose, Mouth) Detection	Yes
Automatic Face Detection	Yes
Automatic Head and Shoulder Detection	Yes
Face Tracking	Yes
Real-time video capable	30 fps
I:I Matching	Yes
I:n Matching	Yes
Matching Engine Robustness	
Pose - Yaw	60°
Pose - Pitch	20°
Pose - Roll	30°
Partial facial occlusion	Yes
Beards and hairstyles	Yes
Large Expressions	Yes
Sunglasses	Some
Irregular lighting	Yes

Minimal Image Characteristics	
Minimum distance between the eyes	29 pixels
Minimum grayscales within the face	32
Templates	
Template size	128 bytes
Template generation speed	20 per second
Template Comparisons	0.040µs
Generation re-entrant thread safe	Yes
Matching re-entrant thread safe	Yes
Host Platform	
Windows 64bit	Yes
Linux	Yes
Database Management	SQ Lite
Benchmark Hardware Specifications	
CPU Speed	3.4 GHz
Memory	2Gb RAM
1 million person Gallery stored in RAM	125 MB

