



Pangiam Trueface

NIST Ranked for Speed and Accuracy

This biometric facial recognition software uses photos taken in real-time and performs a one-to-many match against a temporary gallery of existing images – delivering a safer, smoother, and more efficient identity verification process. Offered as a Software as a Service (SaaS) product, Trueface is versatile to meet a variety of mission requirements.

- **Fast and Accurate** – Automatic facial detection capabilities ranked by NIST as the fastest, most accurate in the world. Quickly search, identify and validate authorized visitors to maintain optimal security. Can match large photo galleries in sub seconds. Enables 1:N matching at a lower scale and OPEX cost.
- **Scalable and Secure** – For the utmost security, on-premises deployments ensure that no data ever leaves its designated infrastructure. As photo galleries increase in size, search performance remains consistent without increasing operating costs.
- **Flexible** – Standards-based, camera agnostic and cloud-ready. Built to run on Amazon Web Services (AWS) for rapid deployment.

Biometric Matching	Supports 1:1 and 1:N facial recognition search and enrollment, facial feature detection, head pose estimation, and detects face coverings and eyeglasses NIST rated for both speed and accuracy
Deployment Models	Supports a variety of deployment models, including: <ul style="list-style-type: none"> • SDK's for on prem or on the edge applications • Dockerized containers for ease of deployment onto existing customer networks • Full AWS (FedRamp Ready, GovCloud) solution. Software as a Service (SaaS) ready to deploy.
SDK Model Supported Architectures <i>(Also see Benchmark Tables)</i>	CPU and GPU support x86 ARM (AArch64, AArch32) Dependency free, packaged as a static library Bindings for Python, Java (Android) and Node.js Built-in lightweight models perfect for resource-constrained environments High precision models for maximum accuracy Able to operate completely offline
Dockerized Container Deployment Model <i>(Also see Benchmark Tables)</i>	Docker container exposing a REST API Available in CPU and GPU-accelerated versions Able to interface with any language through HTTP calls Deployable on premises or on your cloud infrastructure Same as the matcher on the AWS cloud system

<p>AWS Cloud Matcher Deployment Model (Also see <i>Benchmark Tables</i>)</p>	<p>Soon-to-be FedRamp Ready Technology Stack on GovCloud or Commercial Cloud</p> <ul style="list-style-type: none"> • Cognito • AWS OpenSearch • Lambda • API Gateway • EC2 • Amazon Inspect Scanning <p>Pangiam's unique Indexing and Search functions enable scalable, accurate searching with lower OpEx than most matching solutions in the cloud.</p> <p>System redundancy with instances available in Amazon West and East Amazon availability monthly uptime percentage of at least 99.99%</p> <p>Supported Data Transmission Protocols:</p> <ul style="list-style-type: none"> • REST Web Services
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SPECIFICATIONS: Pangiam Trueface

CPU Benchmarks	Speed x86	Speed ARM (Rpi 4)	Ram Req
Face Recognition Lite Model	5.5 ms	35 ms	55 MB
Face Recognition Full Model	75 ms	1200 ms	2 GB
Face Recognition 1 : N search (N = 1,000,000)	10 ms	66 ms	750 bytes / template
Face Landmark Detection	12 ms	70 ms	25 MB
Object Detection	10 ms	85 ms	54 MB
Liveness Detection (is this ID mission?)	54 ms	340 ms	56 MB

GPU Benchmarks	Average Time Per Input	VRAM Usage
Face and Landmark Detection	4.6 ms	1.9 GB
Face Recognition TFV5 Batch Size = 1	8.7 ms	2.73 GB
Face Recognition TFV5 Batch Size = 4	4.1 ms	3.22 GB
Face Recognition TFV5 Batch Size = 16	2.62 ms	4.91 GB

**All benchmarks performed using 1280x720 pixel images containing 1 face or object with CPU only with smallest face height set to 40 px. x86 benchmarks were performed on dual Intel(R) Xeon(R) CPU E5-2630 v4 @ 2.20GHz, 128GB Ram Ubuntu 18.04.4. RPi 4 benchmarks performed using 1.5GHz 64-bit quad-core ARM Cortex-A72, 4GB RAM, Gentoo Base System release 2.6 (AArch64). Ram usage refers to maximum resident memory. 1:N identification speed and memory benchmarks recorded using full model with frVectorCompression flag enabled. Enrollment template size represents conservative average case, but it can be variable due to variable length in identity string.*

Dockerized Container Model Benchmarks

Benchmarks	Speed (CPU)	Speed (GPU)	Ram Req
Enrolling a Person	470 ms	35 ms	55 MB
Identifying a person (1:N) N=1,000 Person Collection	450 ms	1200 ms	2 GB
Extracting Face Information	120 ms	66 ms	750 bytes / template
Detecting Spoof Attempt	590 ms	70 ms	25 MB
Comparing Two Face Features (is this ID Mission?)	4 ms	85 ms	54 MB

**All benchmarks were performed on Intel(R) Xeon(R) E-2176M CPU @ 2.70GHz, 32GB Ram, Nvidia Quadro P2000*