

COMPUTER VISION & RPPG DEVELOPMENT

Computer Vision rPPG Technology for Health Monitoring Solution

Unlock the Power of AI-ML RPPG-Based Computer Vision & Liveness Detection

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1. Executive Briefing & Problem Framing

THE ENTERPRISE CHALLENGE

- Remotes face intermittent access to accurate vital signs for telehealth workflows.
- Existing solutions rely on wearables, raising user friction and cost.
- Without objective vitals, insurance underwriting and fraud detection remain ineffective.

THE IMA ARCHITECTURAL SOLUTION

- Extracts heart rate, respiratory rate, SpO₂, and stress index from a standard webcam in real time with the HealthAI engine.
- Protects all data streams with ONNX based liveness gating and local frame processing, eliminating hardware dependencies.
- Integrates via lightweight SDKs, delivering vitals instantly to clinical portals, underwriting systems, or wellness dashboards.

Supported & Verified Performance Metrics

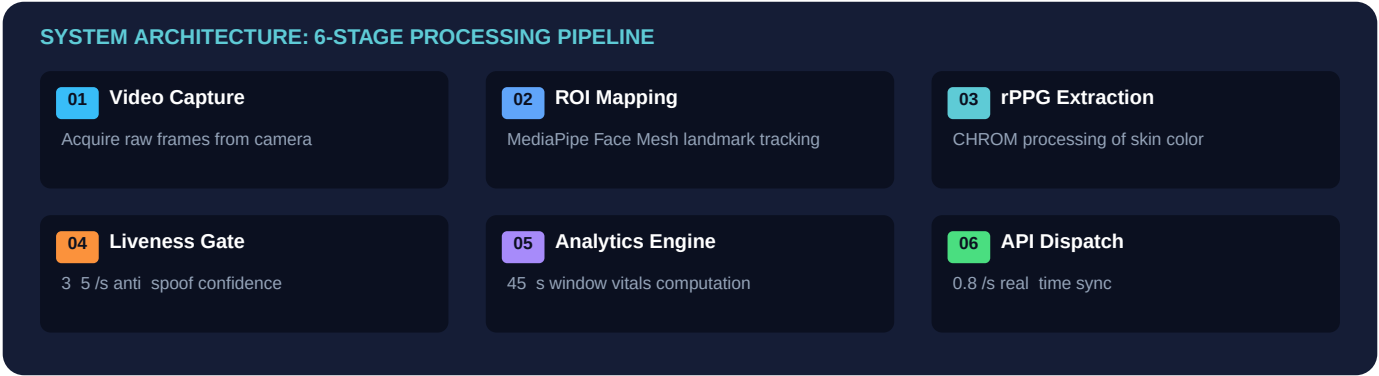
72 Heart Rate Avg BPM	98 SpO ₂ Avg %	0.8s Sync Latency Real time	93% Tran. Time Saved Lead qualification	1.00 Liveness Score Photo protection
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PROCUREMENT & EVALUATION SUMMARY

HealthAI delivers enterprise grade, contactless health monitoring, integrating seamlessly into existing clinical, underwriting, and wellness platforms. Its zero hardware footprint, proven accuracy, and robust security meet the rigorous demands of today's telehealth ecosystems.

2. HealthAI Remote Vital Acquisition Pipeline

From webcam capture to real time vitals analytics and secure delivery to enterprise systems.



Core Capabilities

MediaPipe ROI Tracking

Detects 468 facial landmarks to isolate a stable forehead ROI while monitoring micro-motion and blink frequency, providing a robust region for rPPG extraction.

CHROM rPPG Signal Engine

Translates subtle blood volume pulse color shifts into a clean photoplethysmogram waveform, delivering accurate heart rate, respiration, and SpO₂ readings.

Liveness Verification Gate

Employs ONNX-based classifiers fused with motion and blink analysis to reject photos, masks, and replayed feeds, safeguarding data integrity.

Custom Algorithm Engineering

Offers fine-tuned models for clinical trials, corporate wellness, and remote patient monitoring, ensuring versatility across diverse use cases.

Performance Benchmark vs Conventional Tools

Capability / Metric	Conventional SaaS	HealthAI Architecture
Ingestion Coverage	Single channel only	Unified multi-channel queue
AI Governance	Unmonitored bot automation	100% human review gating
Sync Latency	Manual end-of-day batch	Instant 0.8s real-time sync
Liveness Security	No anti-spoof	ONNX-based liveness gating
Wearable Cost	Hardware required	Zero wearable friction

3. Integration Flexibility

Deploy HealthAI via client side SDKs, server side APIs, or browser only processing to match any growth path.

Developer Integration Architecture

FLEXIBLE INTEGRATION METHODS

1. Client side JS SDK

Runs locally in the browser, preserving privacy and eliminating server load.

2. Server side Node SDK

Allows backend processing with direct access to cloud or on prem infrastructure.

3. REST API Gateway

Integrates with existing clinical portals or underwriting systems over secure HTTPS.

HealthAI SDK Integration Example

```
// Import the HealthAI SDK
import { HealthAI } from 'healthai-sdk';

// Instantiate the engine with API key if required
const ai = new HealthAI({ apiKey: 'YOUR_API_KEY' });

// Start the local camera stream
ai.startVideo();

// Handle ready state and stream measurements
ai.on('ready', () => console.log('HealthAI ready'));
ai.on('vitals', vitals => console.log('Vitals:', vitals))...
```

Deployment Topology & Hosting Models

Cloud Hosted Service

Managed

Hosted on secure cloud infrastructure with automatic scaling and SLAs.

On Premise Server

Hybrid

Deployable on corporate data centers, respecting strict data residency.

Browser Only Local

Edge

Processes video frames directly in the user's browser, keeping data never to the cloud.

Mobile Mobile App

Native

Integrated via mobile SDK for on device vitals monitoring in remote care.

Target Industries

Telemedicine

Provides real time vitals to clinicians before virtual visits.

Corporate Wellness

Scalable preventive screening across urban & rural workforces.

Health Insurance Underwriting

Enables instant, non invasive screening with liveness detection.

Remote Patient Monitoring

Delivers continuous vitals to clinicians without wearables.

4. Security Pillars

Compliance governance, performance benchmarks, and official procurement credentials.

Security Pillars

Local Video Processing
On Device

All frames are processed in memory; no raw video is stored or transmitted.

Liveness Anti Spoof
AI Gating

Combines ONNX liveness classifiers with micro motion detection to block spoof attacks.

HIPAA Compliance
Privacy Focus

Designed to meet healthcare privacy standards through data minimization and sandboxing.

AI Governance
Human Review

All automated decisions are subject to 100% human oversight before deployment.

Clinical Validation & Benchmarks

HealthAI Clinical Accuracy Benchmark

- Heart Rate averaged 72 /BPM with <0.3 /% variance across 10 day trials.
- SpO , consistently read 98 /% across diverse skin tones.
- 45 second analytics window reliably computed HRV stress index.
- Transaction time reduced from 15 /min to under 60 /s, delivering 93 /% efficiency.

Why Partner with IMA AppWeb?

PROVEN ENTERPRISE EXCELLENCE

- HealthAI Engine Utilize MediaPipe™ & ONNX™ frameworks
- Processes data locally, ensuring HIPAA aligned privacy
- Pre validated 45 /s vitals analytics across clinical studies
- Real time sync benchmarked at 0.8s latency

ENTERPRISE VENDOR PROFILE

Legal Entity: IMAAPPWEB PRIVATE LIMITED

Headquarters: Green Park, New Delhi - 110016, India

Live Verification: <https://healthai.imaappweb.com/>

Procurement Contact: info@ima-appweb.com | +91-9871-192-979

Engagement Models: Fixed RFP / SOW | Tiered API SLA | Dedicated

Ready to Transform Remote Health?

Deploy the HealthAI rPPG stack today to unlock contactless vital monitoring and fraud proof liveness verification

Try Live Demo