

SHIELD-RYZEN V2: THE NEURAL ENCLAVE

Forged in the silicon of the **AMD Ryzen AI**. Architected by Inayat Hussain.



License: MIT | Platform: **AMD Ryzen AI** | Status: Live | Security: **Diamond**.

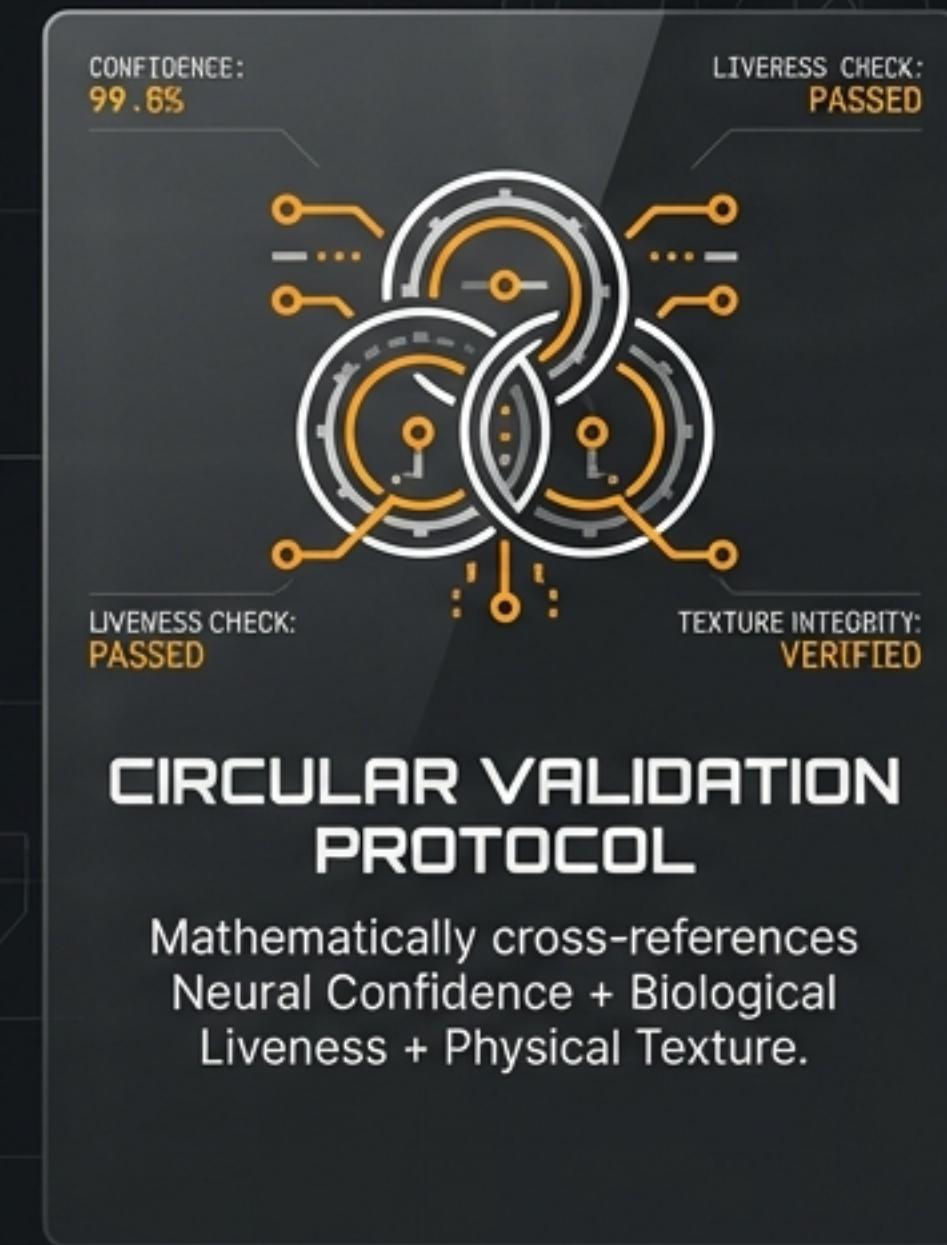
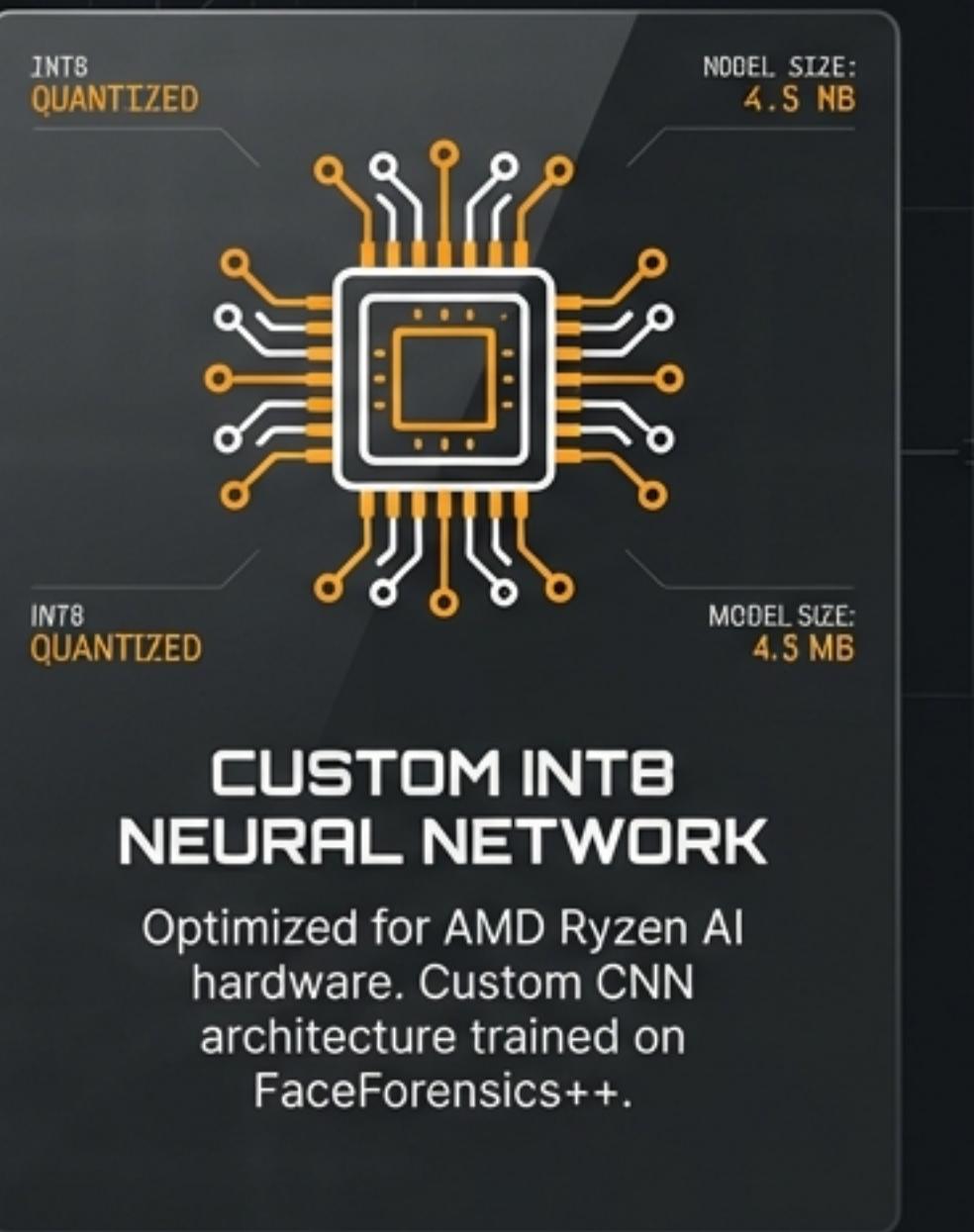
SYS.STATUS: OPERATIONAL

LATENCY: <1MS

AI ENGINE: RYZEN AI

ENGINEERING THE EDGE AI SECURITY ENCLAVE

A biometric security system running entirely on the edge. No Cloud. Zero Latency.



PROJECT: EDGE SECURE

TIME: 14:32:09 UTC

VERSION: 1.0.4 BETA

THE VULNERABILITY OF MODERN FACE RECOGNITION

THE CURRENT FAILURES



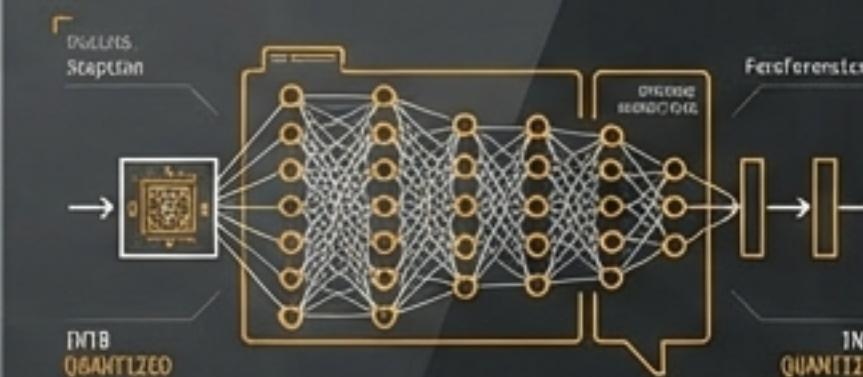
Latency: Cloud-based systems introduce critical delays.



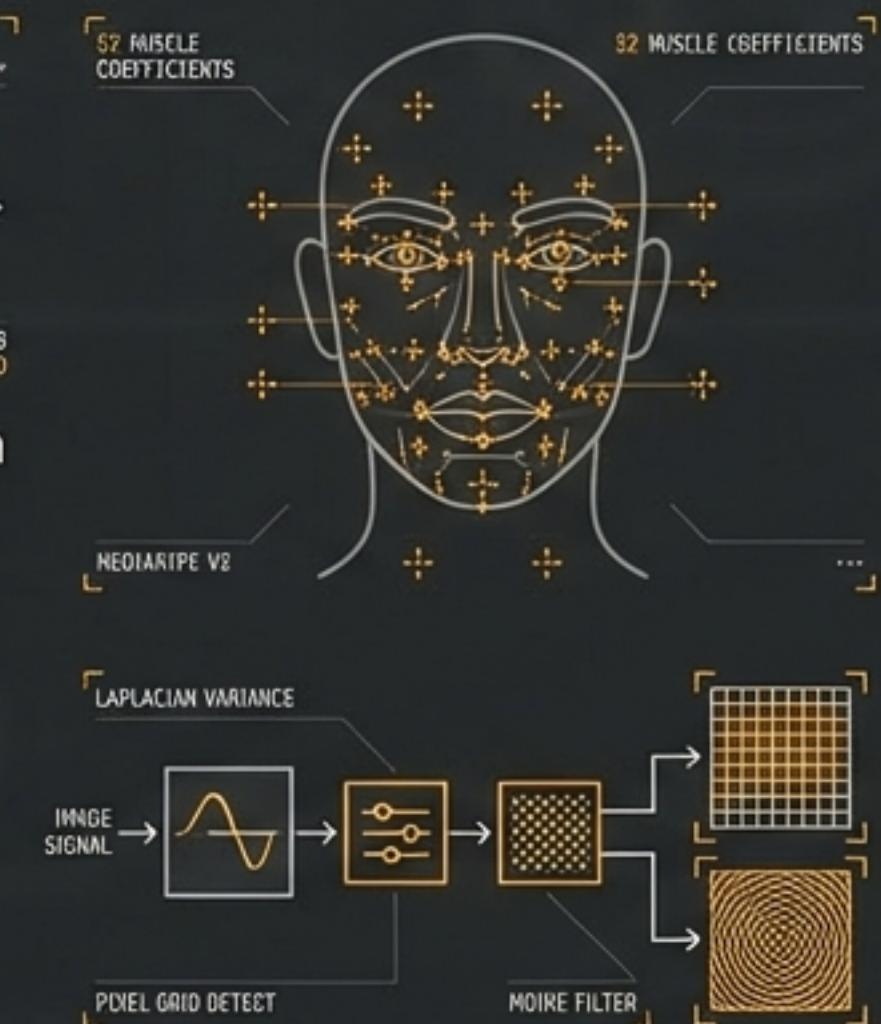
Presentation Attacks: Vulnerable to high-res photos, phone screens, and deepfakes.

THE SHIELD-RYZEN SOLUTION

Multi-Modal Fusion Approach



The Brain: Custom CNN (Xception Architecture) trained on FaceForensics++.

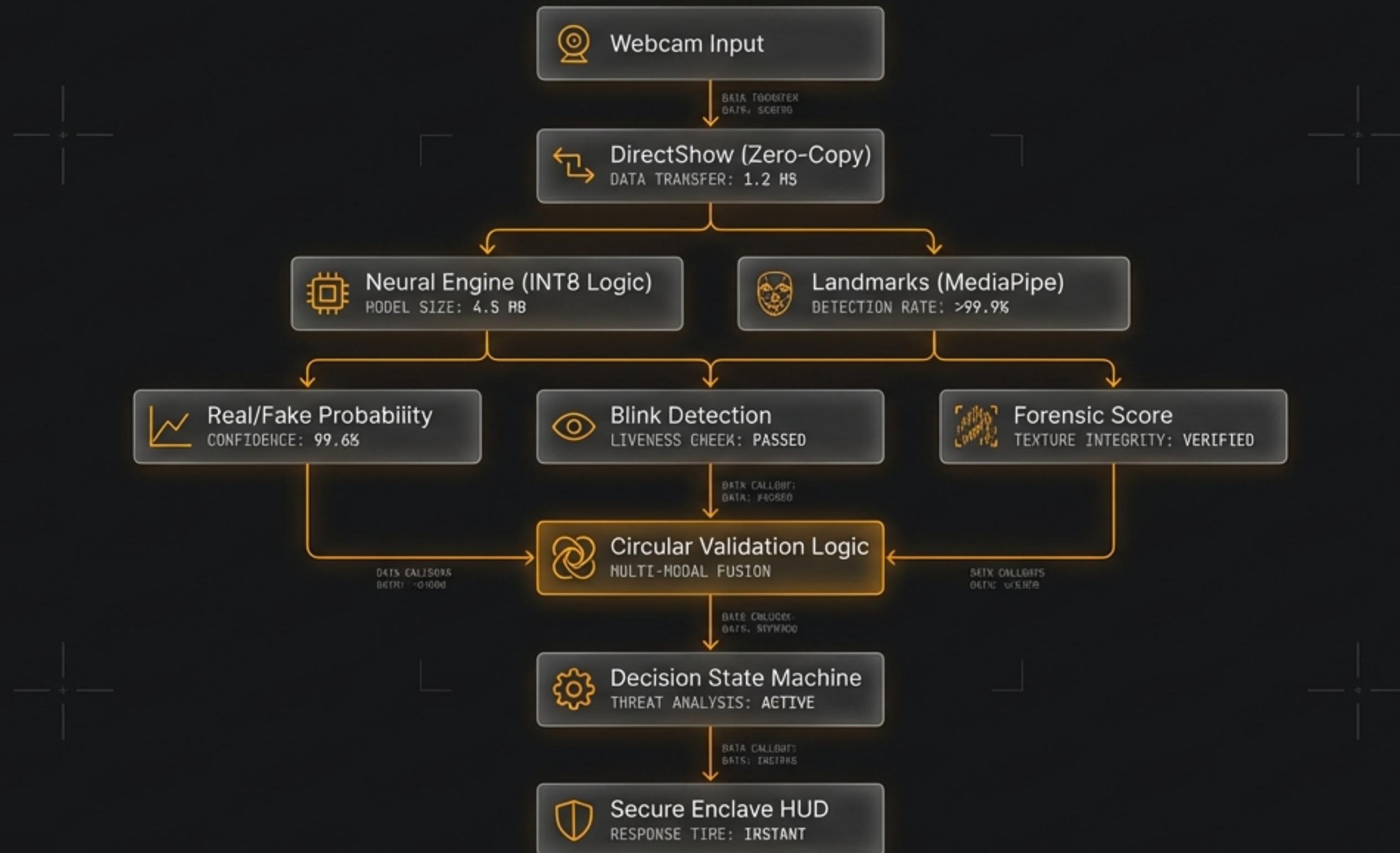


SYSTEM ARCHITECTURE: THE ZERO-TRUST BLUEPRINT

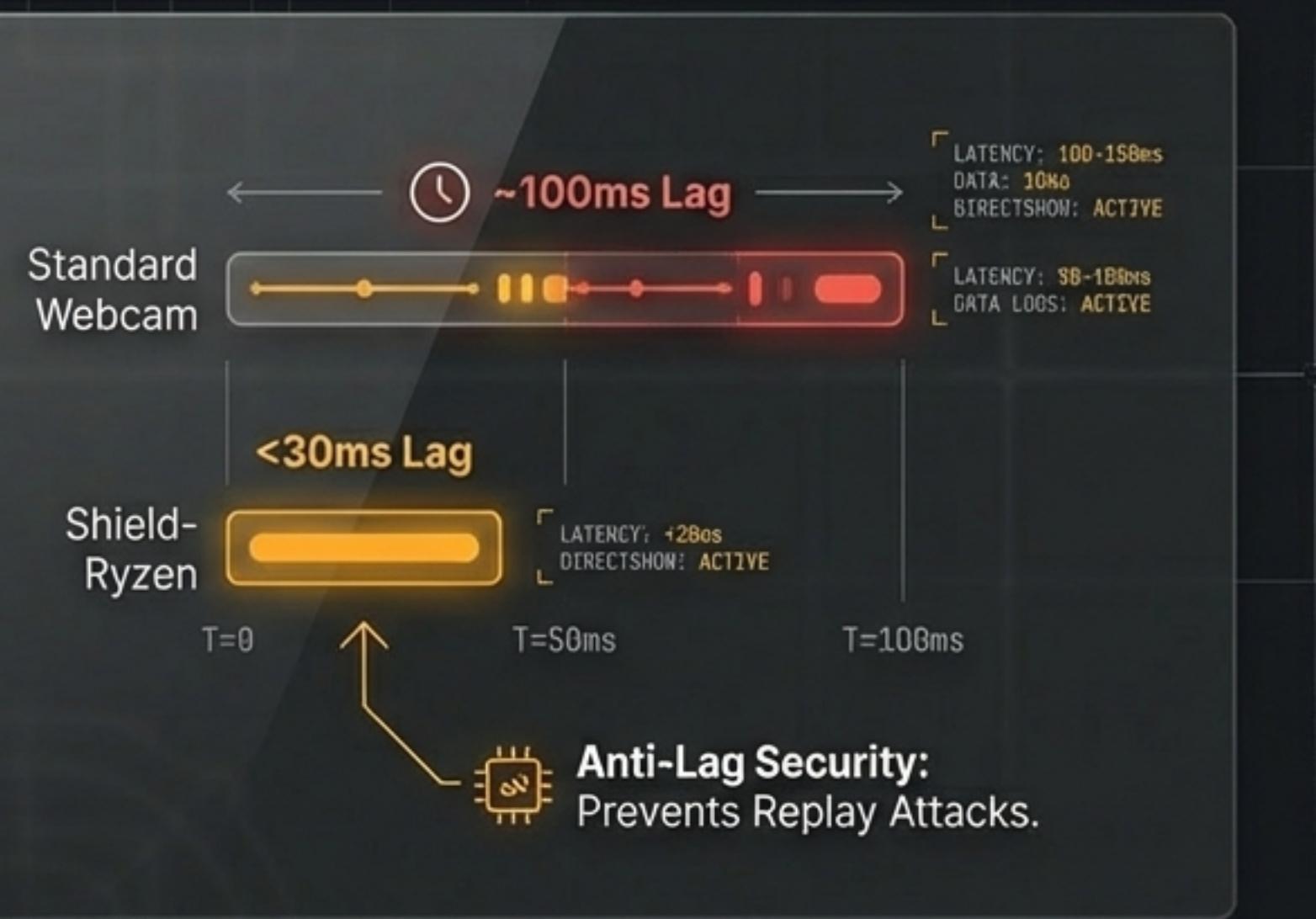
SYS. STATUS: OPERATIONAL

LATENCY: <1MS

AI ENGINE: RYZEN AI



THE HARDWARE LAYER: ELIMINATING LAG AT THE SOURCE



CODE SNIPPET: DIRECTSHOW ZERO-COPY

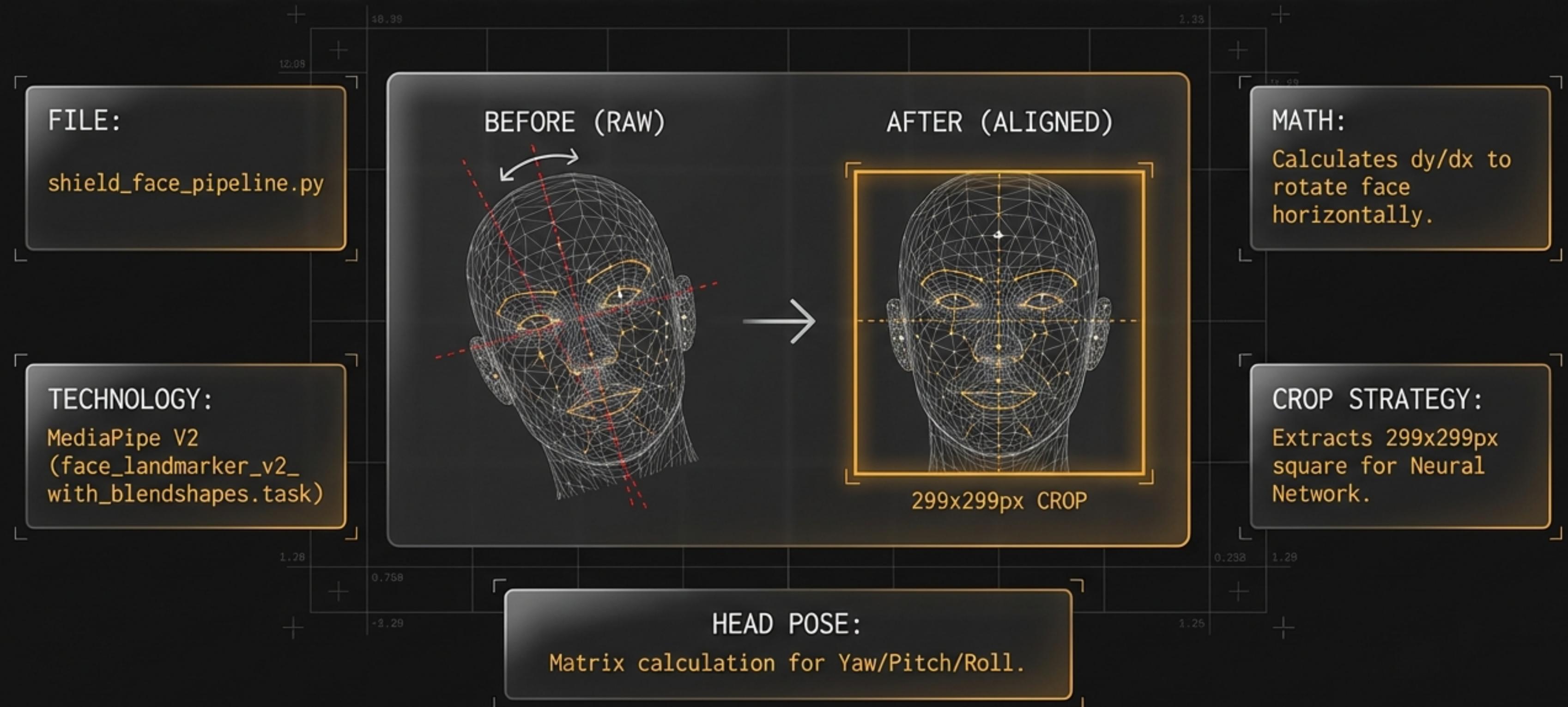
File: shield_camera.py

```
1 driver = cv2.CAP_DSHOW # Force DirectShow
2
3 latency = time.time() - frame_timestamp
4 if latency > 0.05: return 'STALE_FRAME'
```

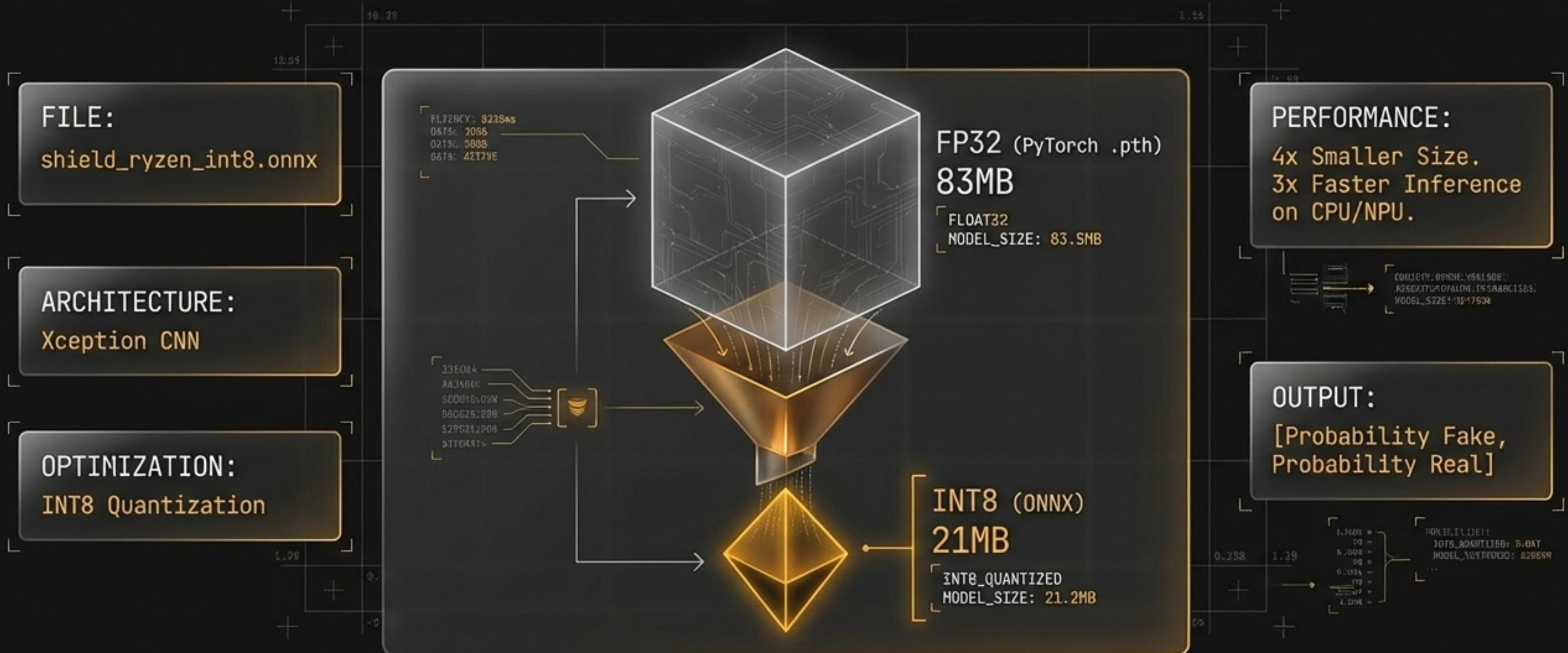
STATUS: OPTIMIZED
MEMORY: ZERO-COPY

MEMORY: ZERO-COPY
LATENCY GREC: ACTIVE

THE PRE-PROCESSOR: GEOMETRIC ALIGNMENT



THE NEURAL CORE: QUANTIZING THE BRAIN



BIOLOGICAL LIVENESS: TRACKING MUSCLE, NOT GEOMETRY

Tracks 52 specific facial muscle coefficients.

Distinguishes biological blinks from head nods.

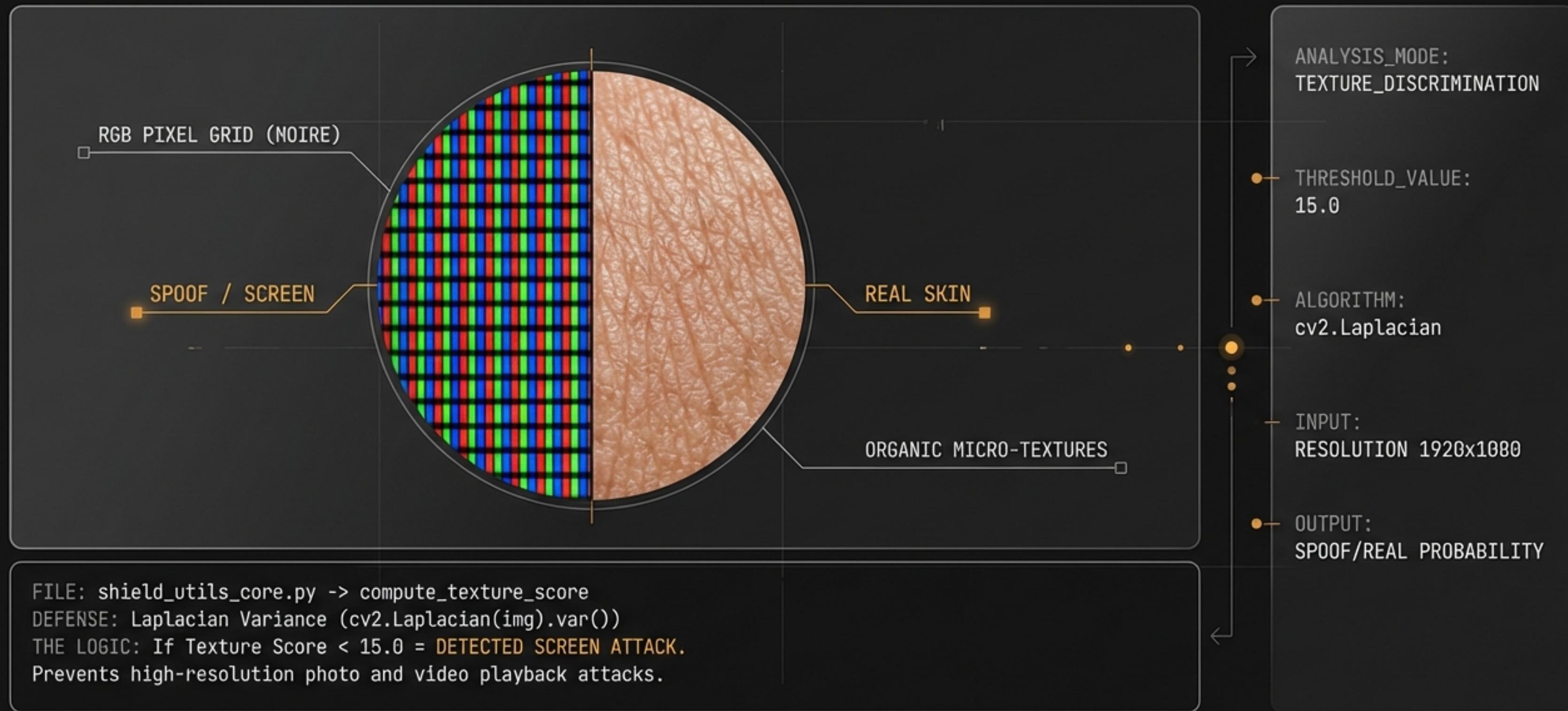


LOGIC:
blendshapes[9] (Left Eye) & blendshapes[10] (Right Eye)

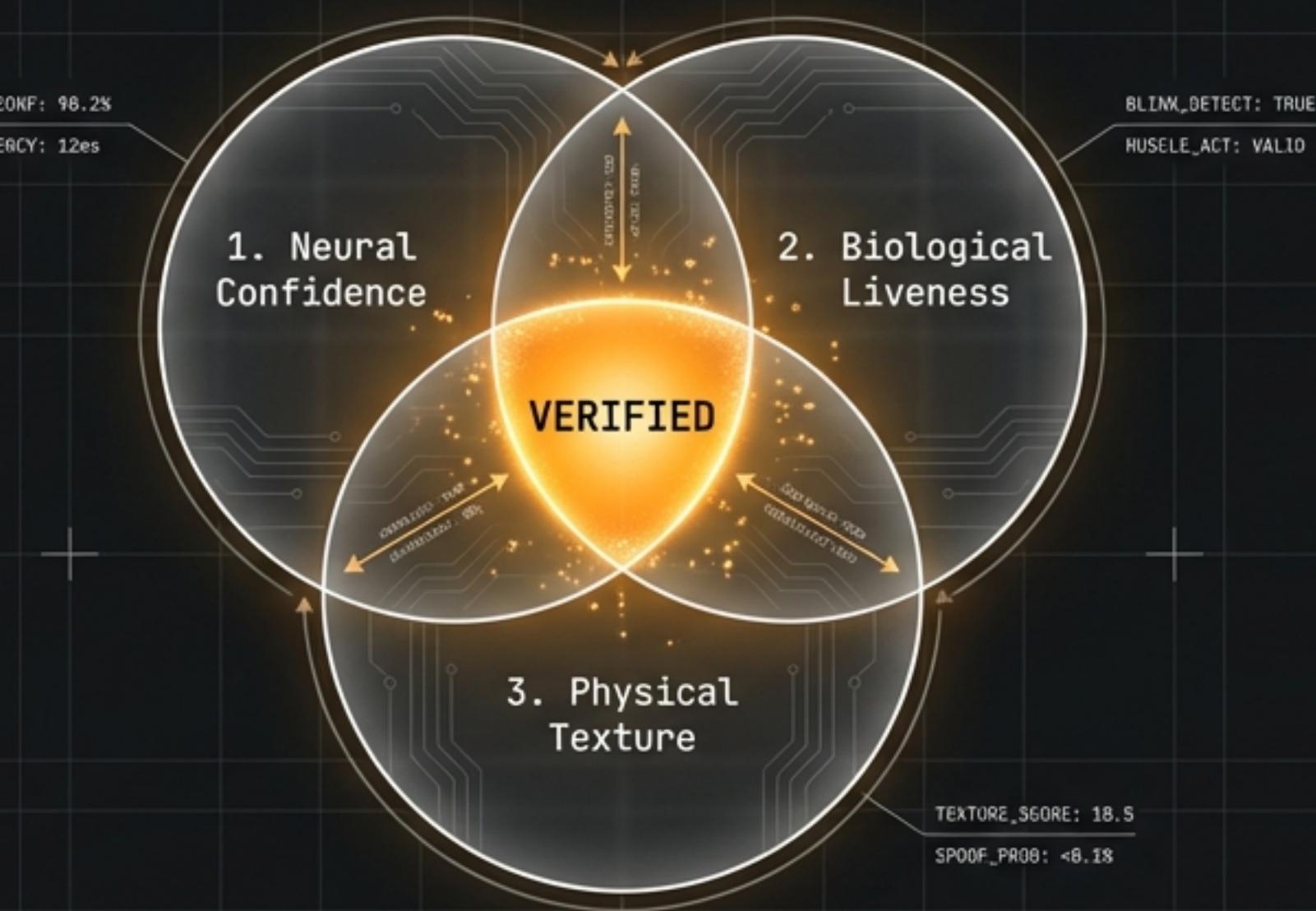
THRESHOLDS:
Closed > 0.5 | Open < 0.2

Old Method: EAR (Aspect Ratio) - Fails on head tilt.
New Method: MediaPipe Blendshapes - Robust.

PHYSICAL FORENSICS: THE TEXTURE ANALYSIS FILTER



THE JUDGE: CIRCULAR VALIDATION LOGIC



LOGIC TABLE

State Machine Logic:

```
IF Neural=Real AND Blink=0 --> WAIT_BLINK (Fall Secure)
IF Neural=Real AND Blink=1 AND Texture>15 --> REAL
Stability Check: Requires 5 consecutive frames to upgrade to VERIFIED.
```

STATE05
MONITOR2R8

FRAME_COUNT: 1/8

STATUS:
PBAR_ECOUNT:
1/5
FBAR_ECOUNT:
<8.25
NETWORK:
00 00 00

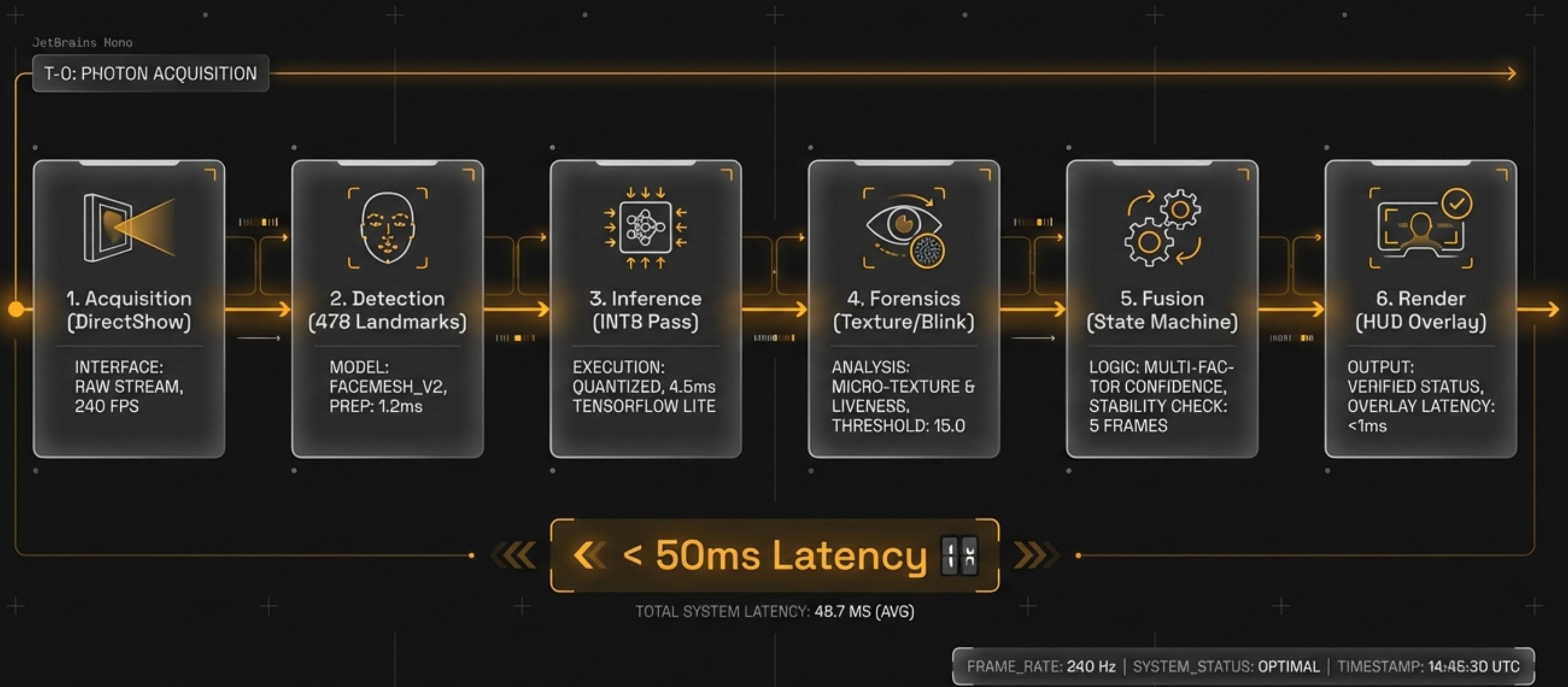
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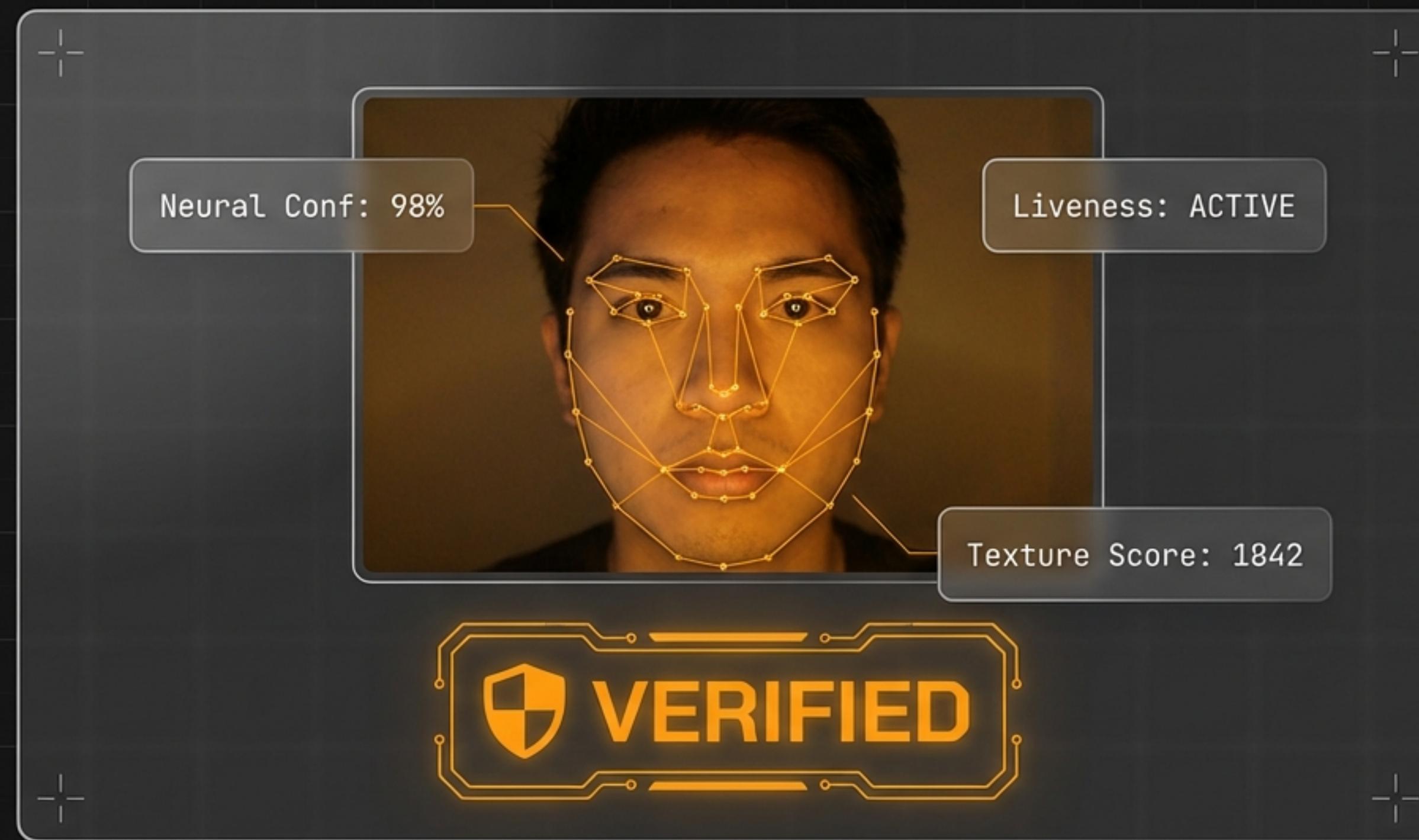
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THE MILLISECOND JOURNEY: FROM PHOTON TO VERIFIED



THE INTERFACE: IRON MAN LOGIC IN PYTHON



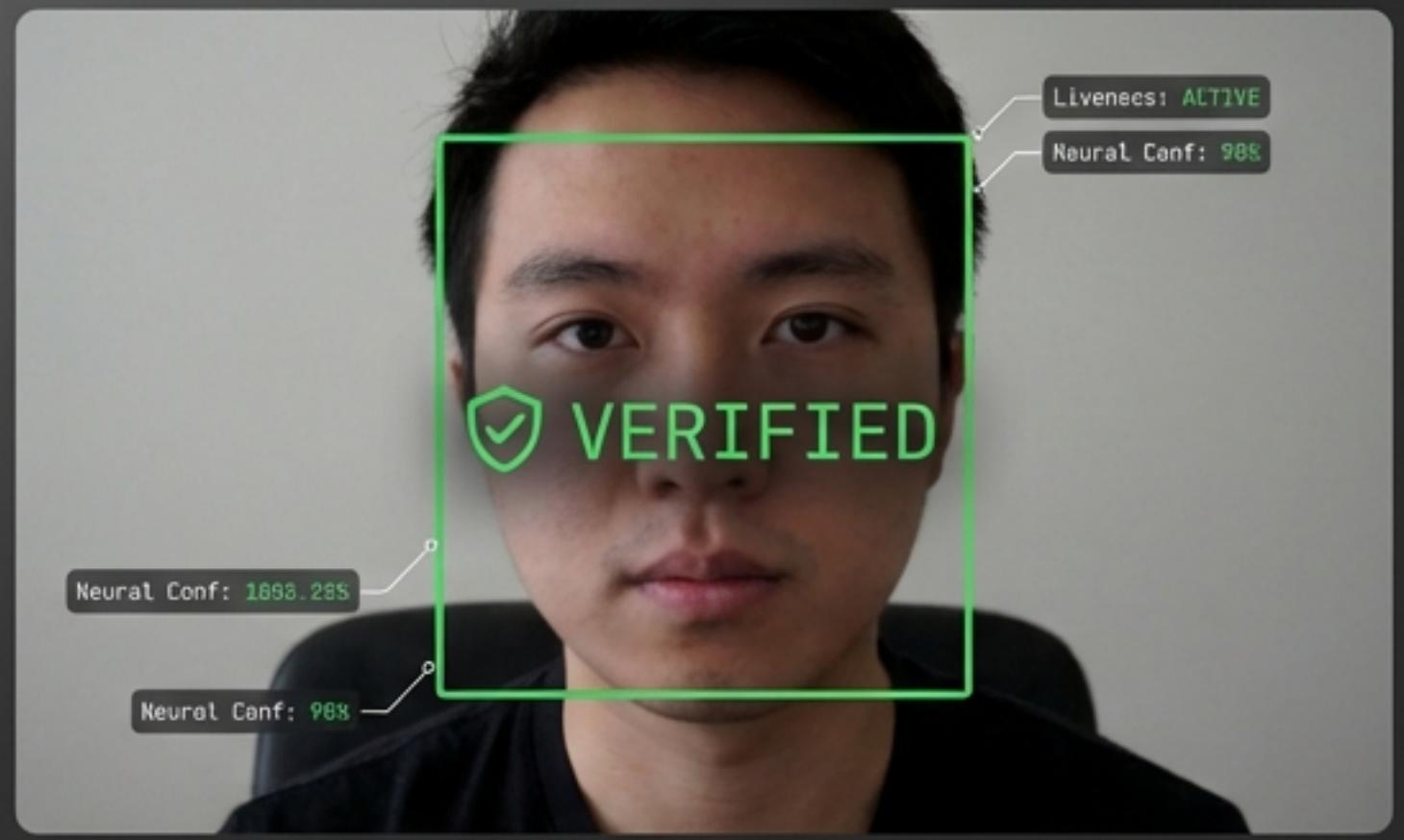
File: shield_hud.py using cv2.addWeighted for glassmorphism.

PROJECT: SHIELD-RYZEN
FRAME RATE: 248 Hz

SYSTEM_STATUS: OPTIMAL
TIME: 14:45:35 UTC
VERSION: 1.4 BETA
NotebookLM

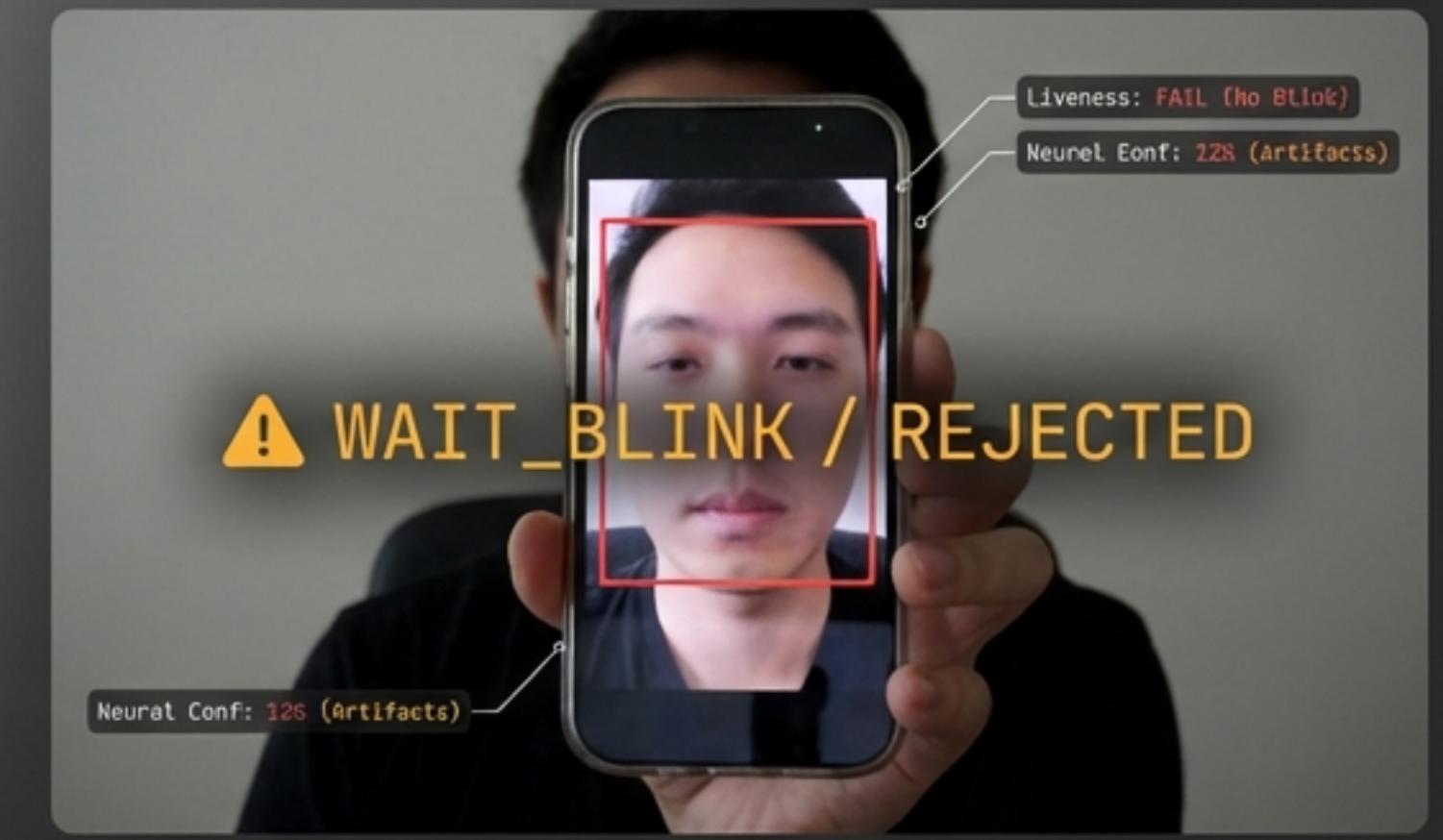
EVIDENCE OF DEFENSE: LIVE ATTACK VECTORS

THE REAL USER



Texture: 1842.5

THE ATTACK



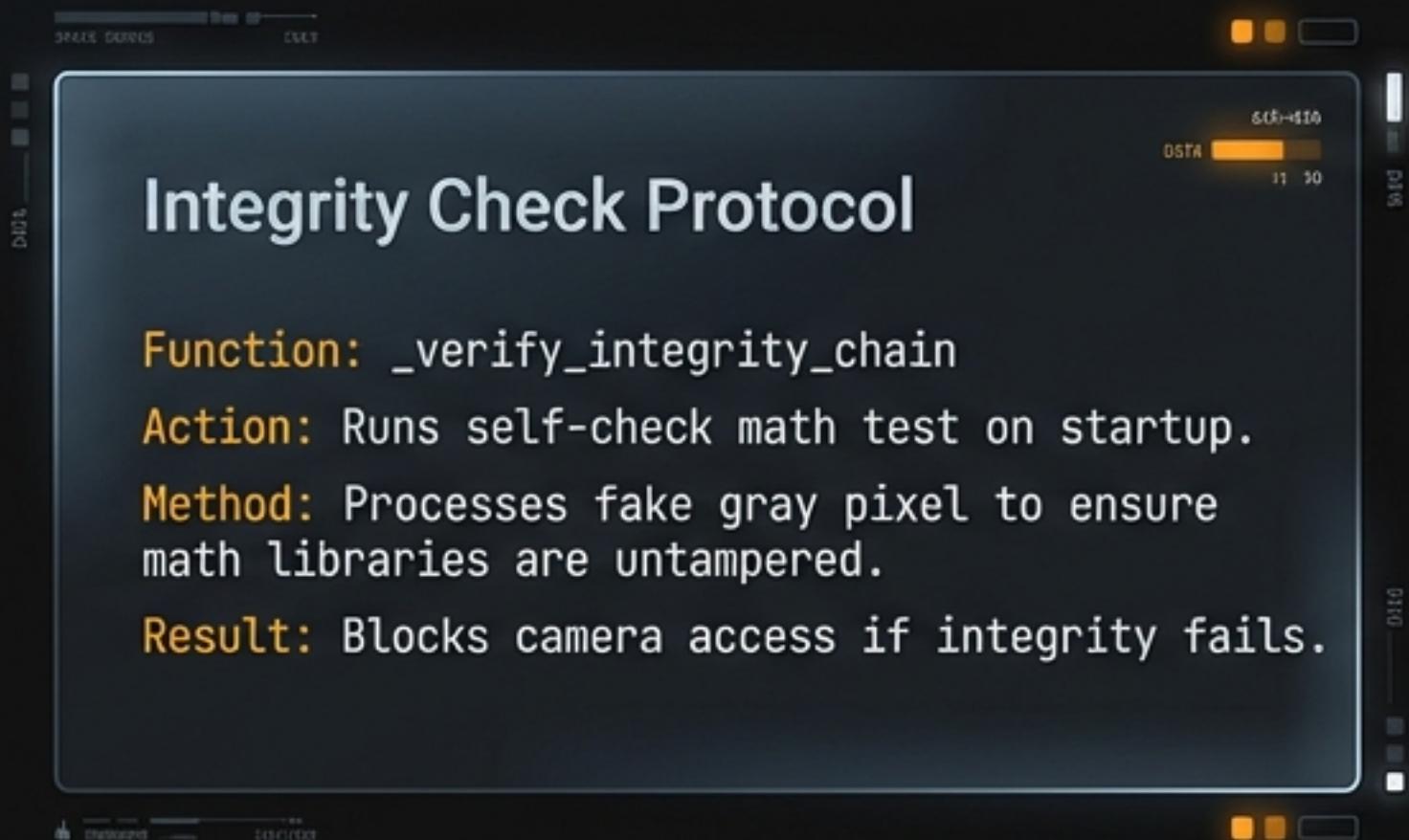
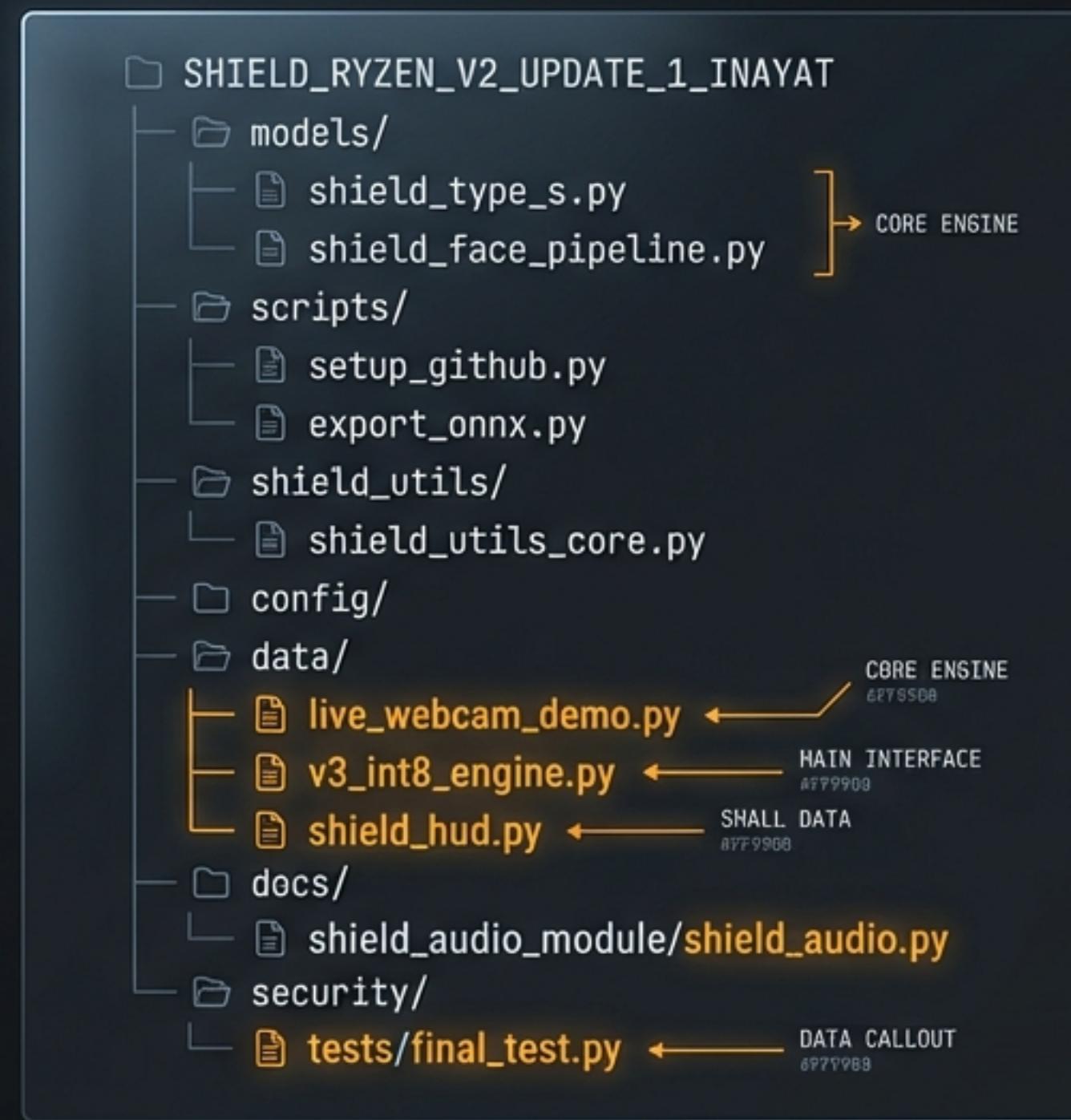
Texture: 12.0 (Screen Detected)

Neural Net detects screen artifacts; Liveness detector sees no blink.

PROJECT: SHIELD-RYZEN
FRAME_RATE: 240 Hz

SYSTEM_STATUS: OPTIMAL
TIME: 14:46:35 UTC
VERSION: 1.4 BETA

PROJECT STRUCTURE & INTEGRITY CHAIN



THE GOLD STANDARD FOR EDGE AI SECURITY

“Basically, I took the raw power of modern AI and engineered it into a localized, impenetrable security enclave.”

STACK:

Python 3.10+, ONNX
Runtime, OpenCV
DirectShow.

PERFORMANCE:

<50ms Latency, 21MB
INT8 Model.

SECURITY:

Zero-Trust Circular
Validation.