PAPER 8 — FORENSICS

Forensics in a World Where Incidents Cannot Occur: A NOVAK Framework

Abstract

Digital forensics is reactive — reconstructing what went wrong. NOVAK flips the field: incidents cannot occur without mathematical authorization. This paper defines the new forensic discipline: Proof-Before-Action Forensics (PBAF).

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1. Introduction

Traditional forensics assumes:

- actions occur
- harm or alteration exists
- logs are incomplete or falsified
- investigators reconstruct truth later

With NOVAK:

harm cannot occur silently.

Every action requires:

- correct rule
- correct input
- correct output
- correct HVET
- correct RGAC linkage

Any deviation = blocked execution.

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2. The End of Incident-Based Forensics

NOVAK eliminates entire categories:

- unauthorized access
- unlogged execution
- silent tampering
- zero-day exploitation
- lateral movement
- process injection
- supply-chain alteration

If the HVET doesn’t match, the system will not act.

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3. Digital Forensics Becomes Mathematical Forensics

PBAF focuses on:

- proving *attempted* tampering
- proving *blocked* actions
- proving *failed* alterations
- analyzing integrity boundaries
- validating Receipt Chains (RGAC)

This turns forensic work into:

💠 Reviewing mathematical receipts
💠 Checking mismatched hashes
💠 Analyzing Safety Gate decisions
💠 Mapping tampering attempts to failure points

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4. Physical Forensics Impact

Digital evidence permeates physical systems:

- cars
- drones
- medical devices
- industrial control
- access systems
- smart infrastructure

NOVAK makes every physical action **provably correct** or **provably rejected.**

This eliminates:

- spoofed sensor data
- manipulated telemetry
- falsified device logs

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5. Legal Landscape

Courts shift from:

- expert interpretation
- conflicting narratives

to:

pure mathematics.

A cryptographic receipt:

- cannot lie
- cannot misremember
- cannot be tampered
- cannot be misinterpreted

Forensics becomes truth by construction.

6. Conclusion

NOVAK eliminates incident-based forensics and gives rise to deterministic forensic science — a discipline based on immutable receipts and provable correctness.