The Internet’s Digital Achilles’ Heel

The Domain Name System (DNS) is the internet’s phonebook. It serves 4.9 billion users, yet remains fundamentally insecure.

The Microsoft “rn” Attack (2024)

- **What Happened:** Attackers registered `rnicrosoft.com’, exploiting the visual similarity between ‘rn’ and ‘m’.
- **Impact:** Millions of phishing emails were sent to corporate employees, bypassing traditional security.
- **Cost:** An estimated **$50 Million+** in fraud-related losses.
- **Root Cause:** Traditional DNS possesses zero intelligence to detect or prevent these sophisticated homograph attacks.

This is a Systemic Failure, Not an Isolated Incident

1. Cloudflare DNS Outage (July 2024)

Issue: Centralised configuration error.

Impact: Global DNS resolution failure. Millions of websites offline for hours.

Cost: **$100M+** in estimated business losses.

2. AWS Route 53 BGP Hijack (Ongoing)

Issue: Mutable records exploited via BGP routing manipulation.

Impact: Cryptocurrency exchange users redirected to fake sites.

Cost: **$150K+** stolen in a single incident.

3. GoDaddy Breach (2023)

Issue: Centralised registrar admin systems compromised.

Impact: DNS records modified, exposing 1.2 million customer credentials.

Cost: **Class-action lawsuits** and **regulatory fines**.

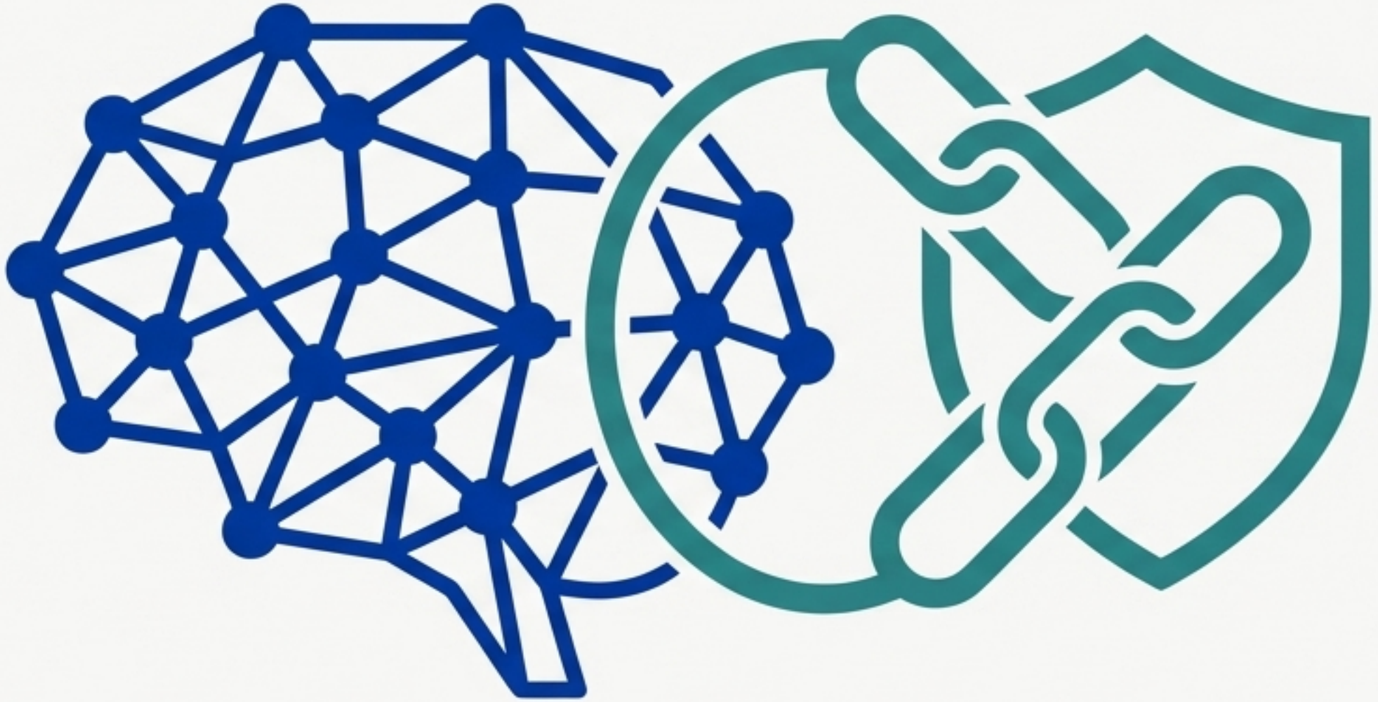
4. Microsoft “rn” Attack (2024)

Issue: No intelligence for homograph detection.

Impact: Millions of users targeted by sophisticated phishing.

Cost: **$50M+** in fraud losses.

A New Paradigm for DNS Security: Intelligence Meets Immutability



AI VALIDATION

- Real-time threat intelligence.
- Detects homograph attacks (`rnicrosoft ≠ microsoft`).
- Prevents typosquatting (`gooogle`, `amazn`).
- Provides risk scoring for every request.

BLOCKCHAIN STORAGE

- Immutable, tamper-proof domain records.
- Cryptographic proof of ownership.
- Decentralised resolution with no single point of failure.
- Censorship-resistant infrastructure.

How NeuraDNS Secures a Domain in Under 2 Seconds

Step 1: User Request

A user requests to register `mywebsite.blockchain` and associate it with IP address `1.2.3.4`.

Step 2: AI Layer Analysis

The request is instantly scanned for threats. Is it a homograph? A protected brand? A private IP? A risk score is generated.

```
Confidence Score: 0.95,
Risk: LOW → APPROVE
```

Step 3: Blockchain Layer Records

Upon AI approval, the registration is cryptographically signed by the user's wallet and permanently recorded on the Solana blockchain.

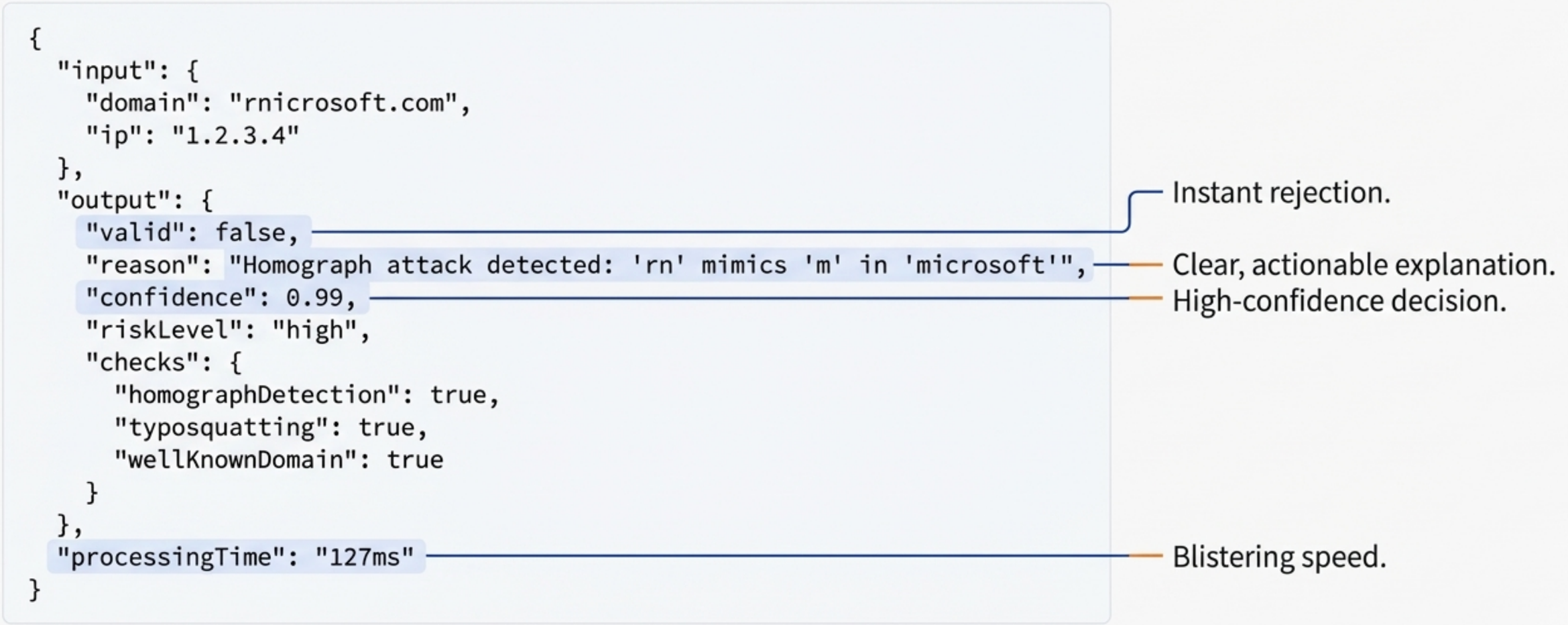
```
Create PDA: ["domain",
"mywebsite.blockchain"]
```

Step 4: Decentralised Resolution

The record is now immutable and globally resolvable. Any user can query the domain and receive the verified, tamper-proof record.

The AI Validation Engine: Real-Time Threat Detection in Action

Our AI layer, using Groq's ultra-fast LLM inference, analyses domain requests in milliseconds to provide a detailed security verdict.



The NeuraDNS Advantage vs. Traditional DNS

We aren’t just an alternative; we are a fundamental upgrade.

Feature	Cloudflare / Google / Route 53	NeuraDNS
Decentralisation	⊗ (Centralised Servers)	✓ (Blockchain-Based)
AI Fraud Detection	⊗ (None)	✓ (Real-time Analysis)
Record Immutability	⊗ (Easily Modified/Hijacked)	✓ (Blockchain-Secured)
Homograph Protection	⊗ (None)	✓ (Built-in AI Detection)
Censorship Resistance	⊗ (Can be Blocked/Seized)	✓ (Unstoppable)

The NeuraDNS Advantage vs. Other Blockchain DNS

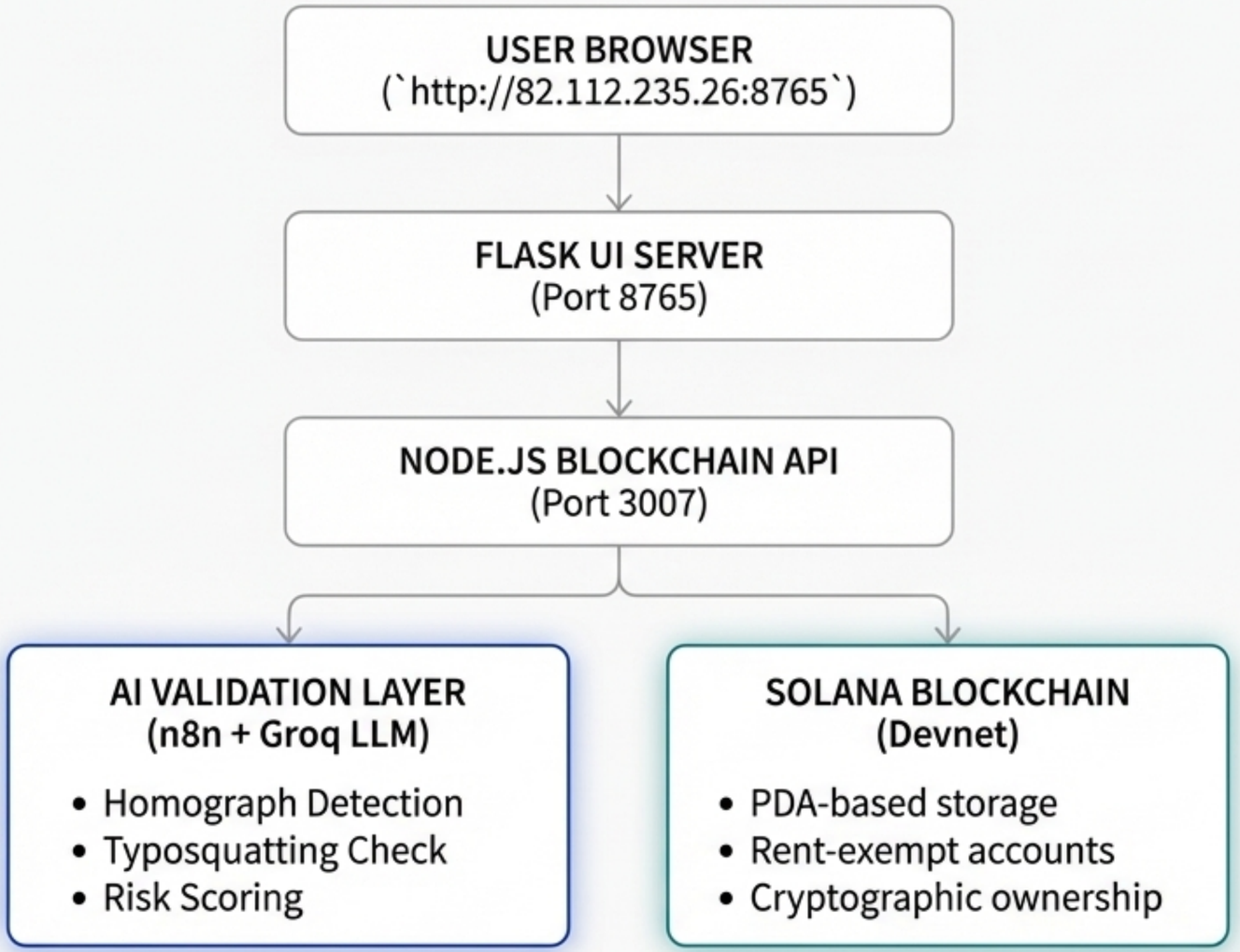
Our AI layer is the critical missing piece in Web3 naming.

Feature	ENS / Handshake / Unstoppable	NeuraDNS
AI-Powered Validation	⊗ (None)	✓ (Groq LLM Integration)
Proactive Fraud Prevention	⊗ (Anyone can register lookalikes)	✓ (AI blocks suspicious domains)
Transaction Speed	⚠ (12-15+ seconds on Ethereum)	✓ (400ms on Solana)
Transaction Cost	⚠ ($5 - $100+ per registration)	✓ (<$0.001 on Solana)
Automated Risk Assessment	⊗ (None)	✓ (Confidence Scoring)

Our Key Differentiator

NeuraDNS is the ONLY blockchain DNS with an intelligent validation layer. Existing solutions will happily let let a user register `g00gle.eth` or `arnazon.crypto`, creating the very problem they should be solving.

A Complete, Deployed, and Auditable Architecture



Live & On-Chain

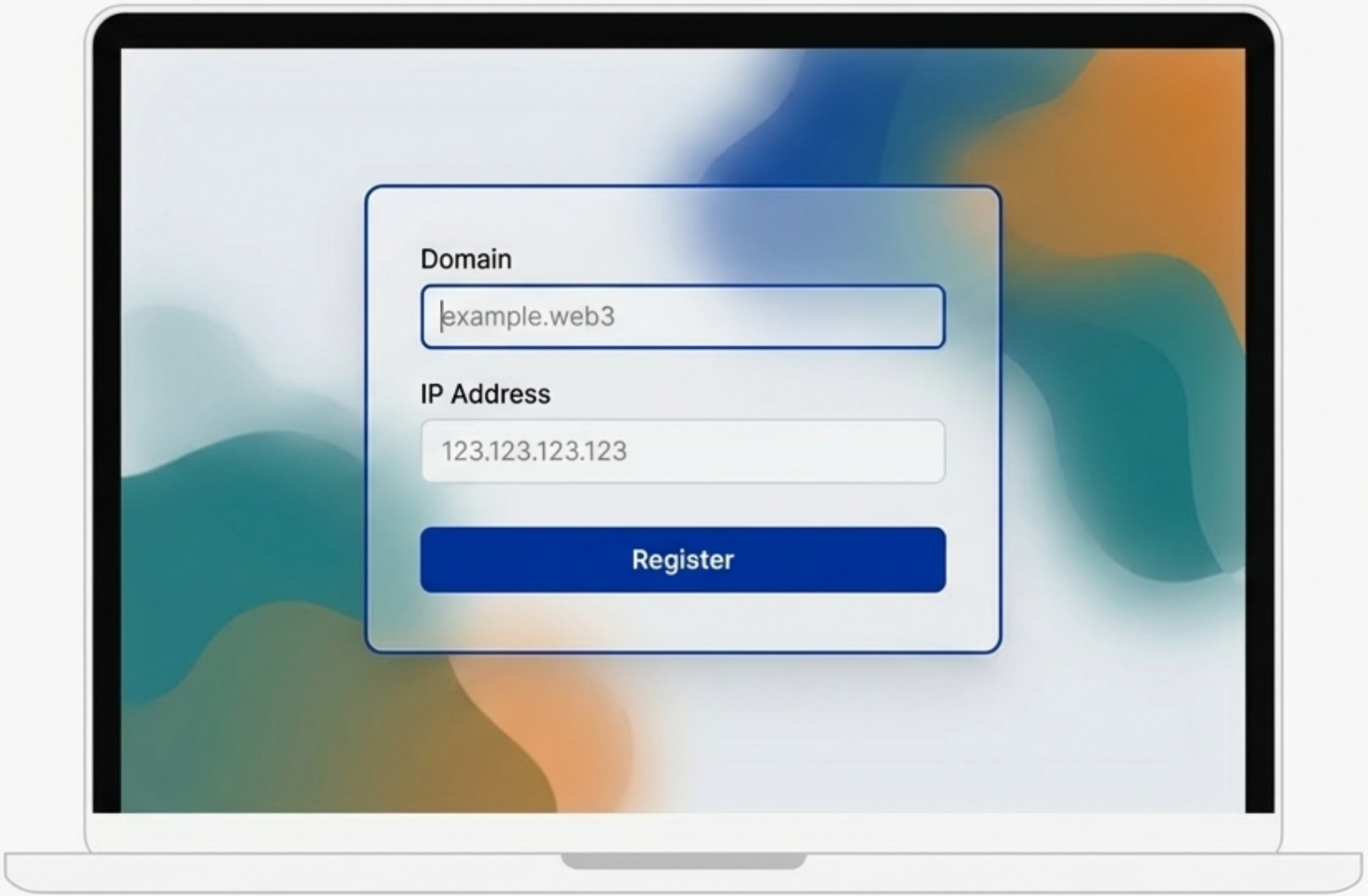
****Live Demo**:**
http://82.112.235.26:8765

****Solana Program ID**:**
H7azh1pVd3uySy7z4JRmQL2Hp
F2D9673Y9RP4yXZWfFM

****Smart Contract Snippet**:**

```
pub fn register_request(
    ctx: Context<RegisterDomain>,
    domain_name: String,
    record: String,
) -> Result<()> {
    ...
}
```

Live Demo: See NeuraDNS in Action



Scenario 1: Register a Valid Domain

Input:
`myblockchainapp.web3`, `8.8.8.8`

Result:
SUCCESS: Registered on the Solana blockchain.

Scenario 2: Block a Homograph Attack

Input:
`rnicrosoft.com`, `1.2.3.4`

Result:
REJECTED: AI detected a high-risk homograph attack.

Scenario 3: Block a Well-Known Domain

Input:
`google.com`, `8.8.8.8`

Result:
REJECTED: AI detected a protected well-known domain.

Scenario 4: Block a Private IP Address

Input:
`mysite.com`, `192.168.1.1`

Result:
REJECTED: Private IP address is not publicly routable.

Our Roadmap to a More Secure Internet

Phase 1: Foundation (✅ Complete)

- AI Validation Engine (Groq LLM)
- Core API (Register, Resolve, Validate)
- Web Interface with Modern UI

Phase 2: Enhanced Features (Q1 2025)

- Multi-Record Support (A, CNAME, TXT, MX)
- Domain Transfer Functionality
- Subdomain Management

Phase 3: QIE Integration (Q2 2025)

- QIE Blockchain Deployment
- Cross-Chain Resolution
- QIE Token Integration & Validator Rewards

Phase 4: Enterprise (Q3 2025)

- Brand Protection API
- Bulk Validation Tools & Analytics
- Compliance Features

Phase 5: Mainnet Launch (Q4 2025)

- Solana Mainnet Deployment
- Governance Token Launch
- Browser Extension & Mobile Apps

Built to Win the QIE Blockchain Hackathon 2025

NeuraDNS directly aligns with the core themes of **AI** x **Blockchain** and Identity & Security.

Judging Criterion	NeuraDNS Implementation
Innovation	The world's **first AI-powered blockchain DNS**, creating a new category of intelligent, decentralised identity.
Technical Complexity	Sophisticated integration of **Solana smart contracts** (Anchor), a **Groq LLM-powered AI engine**, and a full-stack Web3 application.
Real-World Impact	Solves a **billion-dollar security problem** that affects 4.9 billion internet users and protects against tangible threats like phishing and fraud.
Completeness	A **fully functional prototype** with a live public demo, deployed smart contract on Solana Devnet, and comprehensive documentation.

Why NeuraDNS Wins

1 

First-Mover Advantage

We are the only AI-powered blockchain DNS in existence.

2 

Solves a Massive, Costly Problem

DNS attacks cause over $100M in annual losses and represent a critical infrastructure risk.

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3 

It's a Working, Deployed Product

This is not an idea. We have a live demo and a deployed smart contract today.

4 

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4 

Unmatched Technical Excellence

Our novel combination of high-speed AI and a high-performance blockchain is a true technical breakthrough.

5 

Perfect Market Timing

As Web3 adoption accelerates, the need for secure, intelligent, and decentralised identity has never been greater.

NeuraDNS: Where AI Meets Blockchain for Unbreakable DNS.
Built by Amit for the QIE Blockchain Hackathon 2025.

NeuraDNS: Where AI Meets Blockchain for Unbreakable DNS.
GitHub: [NeuraDNS Repository] | Live Demo: http://82.112.235.26:8765