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Client-Triggered Claim Verification and Smart-Contract Risk Heuristics: Architecture of the Basis Desk Verify Benchmark

Epistemic Claim Labeling and Ownership-Renunciation Privilege Downgrading for Retail Investor Protection

Authors: Julian Mercer (ORCID: 0009-0003-1162-170X) and Basis Desk Research Desk

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ABSTRACT

Retail market participants reading third-party cryptocurrency articles, social posts, and decentralized exchange (DEX) pages rarely cross-check factual claims against primary filings or inspect underlying token bytecode for administrative traps. This paper presents the design and evaluation of Basis Desk Verify (<https://basisdesk.news/tools/verify>), a zero-background-tracking Manifest V3 browser extension for Chrome and Firefox, and the Basis Desk Token Safety Checker (<https://basisdesk.news/tools/token-checker>). We introduce a four-class epistemic claim-labeling taxonomy (matches, differs, not_found, opinion) that avoids overclaiming falsity when evidence is absent, and we formalize a smart-contract risk-scoring refinement that downgrades owner-only administrative capabilities (mint, pause, blacklist, tax modification) when contract ownership is provably renounced to the zero or dead address without proxy upgradeability.

Keywords: claim verification; browser extension; smart contract security; token scam detection; ownership renunciation; epistemic labeling

1. Privacy-Preserving Client-Triggered Verification

Browser extensions that request broad host permissions (<all_urls>) introduce severe privacy and supply-chain risks for cryptocurrency users. Basis Desk Verify operates exclusively under the activeTab permission: page content is read only upon an explicit user gesture (toolbar click, keyboard shortcut Alt+Shift+V, or context-menu selection).

In the zero-LLM context phase (~1.7 s latency), the backend extracts outbound links matching the primary-source allowlist, resolves mentioned tickers against live exchange quotes, detects EVM and Solana contract addresses, and queries Vectorize for matching Basis Desk coverage of the same event.

2. Four-Class Epistemic Claim Taxonomy

Automated fact-checkers frequently conflate 'unverified in available sources' with 'false'. Basis Desk Verify instead classifies up to five extracted claims (or a user-highlighted sentence) into four epistemic categories against verified coverage and linked primary documents: (1) Matches verified coverage, (2) Differs from a source (quoting the exact discrepancy), (3) Not in sources we track, and (4) Opinion or prediction.

Evaluations are cached deterministically by content hash and can be exported as immutable public verification cards (/verify/s/<id>) with server-rendered 1200x630 OpenGraph evidence summaries.

3. Smart-Contract Privilege Downgrading Under Renounced Ownership

Raw static-analysis flags from token security APIs frequently trigger false-positive 'high severity' alerts on established immutable tokens (such as PEPE) because bytecode retains

owner-gated functions (e.g., blacklist or mint) even after the owner address has been permanently burned.

Our heuristic evaluator inspects (i) `owner_address` against canonical burn addresses (0x000...0000, 0x000...dead), (ii) `is_proxy` upgradeability, (iii) `hidden_owner`, and (iv) `can_take_back_ownership`. When ownership is irrecoverably renounced and no proxy or hidden-owner vector exists, owner-only capabilities are downgraded from high/critical severity to informational ('owner renounced'), eliminating false alarms while preserving critical warnings on active honeypots and modifiable tax contracts.

4. Public Availability and Multilingual Support

Basis Desk Verify is publicly distributed on the Chrome Web Store and Mozilla Add-ons (Firefox) with localized interfaces and claim-check notes in seven languages (English, Spanish, Portuguese, Turkish, Russian, Vietnamese, and Indonesian). The web-based Token Safety Checker is freely accessible at <https://basisdesk.news/tools/token-checker>.

References and Live Reproducibility Endpoints

- [1] Basis Desk Verify: Chrome & Firefox Extension Landing Page (2026).
<https://basisdesk.news/tools/verify>
- [2] Basis Desk Token Safety Checker: EVM & Solana Contract Scanner (2026).
<https://basisdesk.news/tools/token-checker>
- [3] Basis Desk Verify Privacy Policy & Limited Use Disclosure (2026).
<https://basisdesk.news/tools/verify/privacy>
- [4] Chief Editor Accountability & ORCID Record: Julian Mercer (2026).
<https://basisdesk.news/about/julian-mercer>

Appendix: Linked Basis Desk Verification & Data Endpoints

- * Basis Desk Home & Live Newsroom: <https://basisdesk.news/>
- * Research Portal & Longitudinal Datasets: <https://basisdesk.news/research>
- * Source-Verified Crypto News Feed: <https://basisdesk.news/news>
- * Research-Desk Deep-Dive Analysis: <https://basisdesk.news/analysis>
- * Regulator, Statute & Company Hubs: <https://basisdesk.news/entities>
- * Evergreen Crypto Explainers (300 Topics): <https://basisdesk.news/learn>
- * On-Chain Whale Tracker (\$5M+ Transfers): <https://basisdesk.news/data/whales>
- * Basis Desk Verify (Chrome & Firefox Extension): <https://basisdesk.news/tools/verify>
- * Smart-Contract Token Safety Checker: <https://basisdesk.news/tools/token-checker>
- * Model Context Protocol (MCP) Server for AI Agents: <https://basisdesk.news/developers>
- * Machine-Readable Dataset (CSV): <https://basisdesk.news/api/research/dataset.csv>
- * Machine-Readable Dataset (JSONL): <https://basisdesk.news/api/research/dataset.jsonl>
- * Frictionless Data Package (JSON): <https://basisdesk.news/api/research/datapackage.json>
- * BibTeX Citation Record: <https://basisdesk.news/api/research/cite.bib>