UDC 004.738
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TRUST ANALYZER FOR IOT ECOSYSTEMS

Trust is a critical factor in IoT ecosystems, where diverse and interconnected devices exchange vast amounts of data. Ensuring the reliability, security, and overall trustworthiness of these systems requires a robust evaluation framework.

This work presents a Trust Analyzer, a modular and adaptable component designed to assess IoT system trustworthiness across multiple Trust Evaluation Categories (TECs), including security, reliability, resilience, safety, privacy, system goals, uncertainty, and dependability. The Trust Analyzer employs a systematic approach to aggregate TEC metrics while minimizing false positives from individual assessment tools. By continuously analyzing system behavior, it detects deviations from expected operations and tracks trust degradation over time. The architecture is designed for seamless integration into IoT systems at any stage whether during development or active deployment offering real-time insights into system performance and vulnerabilities. By incorporating comprehensive trust assessments, the Trust Analyzer enables informed decision-making for workload distribution, anomaly detection, and risk mitigation.

This approach not only strengthens individual IoT components but also enhances the overall trust posture of the ecosystem. The proposed framework ensures that IoT systems remain reliable, resilient, and secure, fostering greater confidence in their operation across various domains, including smart cities, healthcare, and industrial automation.

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