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SMART HOME INSURANCE: BLOCKCHAIN-BASED AUTOMATED CLAIMS USING IOT SENSOR DATA

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ABSTRACT

Insurance claim management has evolved from traditional paper-based systems to modern digital platforms, yet the process still suffers from inefficiencies, delays, and a high risk of fraud. Manual verification of claims often results in disputes between insurers and policyholders, creating mistrust and dissatisfaction. With the growth of smart homes and the widespread use of Internet of Things (IoT) devices, new opportunities have emerged for collecting accurate, real-time evidence of incidents such as fire, water leakage, or intrusion. However, integrating this data securely into claim workflows remains a significant challenge. To address these limitations, this paper proposes a blockchain-based framework that automates insurance claim settlement using IoT sensor data. In the proposed approach, sensors installed in smart homes generate event records that are transmitted to a blockchain network. Smart contracts are then used to validate these records against predefined insurance policies, automatically triggering claim initiation, verification, and settlement. This process minimizes human intervention, ensures transparency, and strengthens protection against fraudulent claims. Our evaluation shows the framework significantly reduces processing time, lower administrative overhead, and provide customers with time and more reliable claim settlements. By combining blockchain's immutability with the accuracy of IoT data, the system offers insurers and policyholders a secure and efficient alternative to conventional methods.

KEYWORDS: *Smart Home Insurance, Blockchain, IoT, Automated Claims, Smart Contracts, Fraud Prevention, InsurTech.*

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