Automated AI-Driven Reduced-Latency Fraud Detection for Secure Smart Metering and Energy Billing Systems

Koushal Majeti
Software Architect, IT
Femtosol LLC, Phoenix 85041, USA

Syed Mohammad Ghouse
Professor, School of Management
CMR University
Bangalore, Karnataka
ghousesyedcmr@gmail.com

Abstract:
Smart metering in todays advanced world of modern energy infrastructures has introduced various opportunities for efficiency and also lead to the state of facing frauds, various manipulation in billing. This research paper presents a novel framework AI driven reduced latency fraud detection designed for high security in billing systems. This research work is an integration of secure communication protocols and machine learning models. The proposed system emphasizes deep learning models for anomaly detection in various consumption patterns. Trust and resilience are ensured by integrating architecture with block chain-based data exchange with a lighter weight communication protocol, thereby minimizing the overhead on computations and leading to scalability. Real time evaluation on smart meter data sets has demonstrated improved accuracy with latency reductions up to 42%. This proposed work establishes a benchmark in energy fraud prevention there by delivering scalable solution for secured billing and sustainable smart grid ecosystems.