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A Survey of Consensus Algorithms in Distributed Ledger Technology for Internet of Things

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This comprehensive survey examines consensus algorithms utilized in Distributed Ledger Technology (DLT) for Internet of Things (IoT) environments. The paper provides a comparative analysis of consensus protocols including Proof of Work, Proof of Stake, Proof of Authority, Proof of Elapsed Time, Proof of Space, Proof of Activity, Practical Byzantine Fault Tolerance algorithm and Directed Acyclic Graph based approaches such as Adaptive Proof of Work, and Temporal Proof. These algorithms are evaluated against critical metrics for IoT contexts: energy efficiency, transaction throughput, scalability, latency, and security guarantees. The survey highlights fundamental trade-offs between decentralization, security, and performance in DLT implementations, with particular focus on mechanisms compatible with resource-constrained IoT networks. Through this systematic comparison, the paper provides a comprehensive overview of the suitability of various consensus mechanisms within IoT-oriented distributed ledger systems.

Author: PODGÓRSKI, Paweł (Warsaw University of Technology, Faculty of Electrical Engineering)

Presenter: PODGÓRSKI, Paweł (Warsaw University of Technology, Faculty of Electrical Engineering)

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