MTES: An intelligent Trust Evaluation Scheme in Sensor-Cloud enabled Industrial Internet of Things

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Abstract— As an enabler for smart industrial Internet of Things, sensor-cloud facilitates data collection, processing, analysis, storage and sharing on demand. However, existing cloud computing model cannot provide direct and effective management for the sensor nodes. To this end, mobile edge nodes with relatively strong computation and storage ability are exploited to provide intelligent trust evaluation and management for sensor nodes. In this paper, an edge computing based intelligent trust evaluation scheme is proposed to comprehensively evaluate the trustworthiness of sensor nodes using probabilistic graphical model. The proposed mechanism evaluates the trustworthiness of sensor nodes from data collection and communication behavior. Moreover, the moving path for the edge nodes is scheduled to improve the probability of direct trust evaluation and decrease the moving distance. An approximation algorithm with provable performance is designed. Extensive experiments validate that our method can effectively ensure the trustworthiness of sensor nodes and decrease the energy consumption.

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