

BIG DATA CLEANING BASED ON MOBILE EDGE COMPUTING IN INDUSTRIAL SENSOR-CLOUD

ABSTRACT

With the advent of 5G, the Industrial Internet of Things (IIoT) has developed rapidly. The industrial Sensor-Cloud System (SCS) has also received widespread attention. In the future, a large number of integrated sensors that simultaneously collect multi feature data will be added to industrial SCS. However, the collected big data is not trustworthy due to the harsh environment of the sensor. If the data collected at the bottom networks is directly uploaded to the cloud for processing, the query and data mining results will be inaccurate, which will seriously affect the judgment and feedback of the cloud. The traditional method of relying on sensor nodes for data cleaning is insufficient to deal with big data, while edge computing provides a good solution. In this project, a new data cleaning method is proposed based on the mobile edge node during data collection. An angle based outlier detection method is applied at the edge node to obtain the training data of the cleaning model, which is then established through support vector machine (SVM). Besides, online learning is adopted for model optimization. Experimental results show that multi-dimensional data cleaning based on mobile edge nodes improves the efficiency of data cleaning while maintaining data reliability and integrity, and greatly reduces the bandwidth and energy consumption of the industrial SCS.