DESIGN AND IMPLEMENTATION OF AGRICULTURAL SENSOR DATA OF MULTIPLE AND HETEROGENEOUS ACCESS ARCHITECTURE

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Abstract

For the moment, the Internet of things system oriented to the whole industry chain is gradually established in some fields of agriculture; At the same time, traditional management style of agricultural sensor data lack effective sharing mechanism, that can not meet the demand of agricultural network system for the multiple and heterogeneous sensor data. Especially with the growing the demand of agricultural products quality safety supervision system to the monitoring of agricultural products planting, production, transportation, sales process, that is requiring a large number of heterogeneous sensor data to support.

In the face of massive and heterogeneous sensing data, how to build an effective data access architecture,that is the first problem to solve the data sharing of agricultural sensor data. the paper is based on the existing sensor data access technology, combined with the cleaning technology and the buffer mechanism, explore the access mechanism of a multiple and heterogeneous agricultural sensor data for the multiple, heterogeneous and unstable characteristics of agricultural sensor data, and design the he access architecture is an agricultural sense data. it is consists of The Data Adapter Module, The Data Cleaning Module, The Data Buffer Module and The Thread Management Module. In The Data Adapter Module.Mainly studies the adapter resources dynamic allocation mechanism based on the Chukwa framework, using dynamic distribution principle of the Agent to realize the data adapter; And through the design of data buffer pool mechanism, solve data processing problem when large number of sensor data access in the short time; and add data thread management module, dynamically manage data access link thread, that realize concurrent mechanism of data access based on the above two; the other designed the data access port by using the Socket transport mechanism for non blocking communication mode. In addition, the distributed deployment mode which this architecture using increase the system load balance ability, and loose coupling, strong scalability, stability characteristics, can meet the demand of high concurrent processing of massive data.

In this paper, for the need of heterogeneous sensor data in agricultural products quality safety supervision system of the agricultural production, transportation, sales process. done the data access test. At present, the system has been successfully access the aquatic, logistics, field, facilities and other different types of agricultural sensor data, the test results show that multiple and

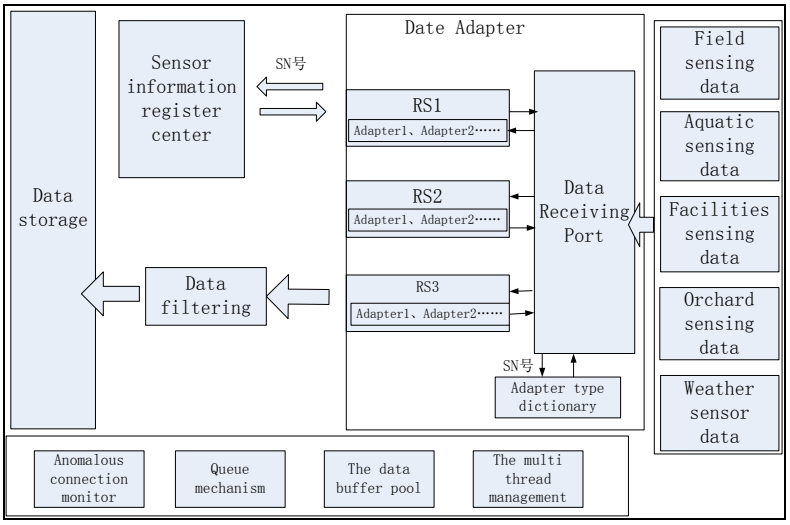
heterogeneous agricultural sensor data access architecture can meet the need of access and processing for massive agricultural sensor data.

Keywords: Multiple and Heterogeneous Agricultural Sensor Data,Access Architecture, Data Adapter

INTRODUCTION

The system structure frame chart reflects the overall system structure, as you can see, the data goes into adapter module entrance, the number of sensor and a data transfer unit adapter module will be came to data registration center, data center use the two parameter SN and sensor group to identify this group data corresponding to the SN number, and then returned to the data adapter module; receiving SN signal, the adapter module according to the type of adapter used to parse the dictionary out adapter for this data set, start on the data adapter, data will be converted into unified format system internal data flow; After adaptation, through data filtering system for data cleaning, mainly do on the abnormal data annotations and the dirty data for clearance and disposal;In order to prompt the throughput of the system,it will carry on the concurrency control of data; At last,data that via a data cleaning will enter the data storage module, the data is storaged.

Fig. 1 The System frame picture



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