The Design of Grid-based Surveillance System　with Embedded Ganglia Broker

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ABSTRACT

A traditional residence surveillance system only can continuously capture monitoring images from image sensor that cannot actively perform the intelligent identification. Image sensors produce lots of continuous monitoring images so that the system spends a lot of time and storage space in processing these images, which is needlessly expensive. The system captures all images from image sensors in turn, so some monitoring blind spots exist among image sensors in the traditional surveillance system. This research proposed a design of Grid-based Surveillance System　with Embedded Ganglia Broker to improve the shortcoming of traditional surveillance systems in real-time monitoring. The proposed image sensor could judge whether images are abnormal or normal by comparing the difference of the background image and captured images. Consequently, the Embedded Ganglia Broker, which is designed by embedded system development board, would send those abnormal images to the adaptive back-end server with Grid Middleware ; therefore, this could prevent from storing a large number of images that are normal. The proposed intelligent image sensor also provides a mechanism for multiple front-end image sensors to capture the monitoring images in real time and solve the problem of monitoring blind spots in the traditional surveillance system.

In order to eliminate the congestion from images storing, this research proposed a distributed storing structure based on Grid technologies. The proposed system structure utilizes Embedded Ganglia Broker to integrate the backend-distributed computer resources and provide a real-time storage mechanism to solve congested problem caused by large images transmission. The proposed system also uses the RFT element of Globus tools for data replication to collect abnormal image files located at the back-end storing servers, and provides users to monitor and manage.

Key Words : Grid , Intelligent Image Sensor , Embedded System

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