

RFID-based Production Data Analysis in an IoT-enabled Smart Job-shop

ABSTRACT

Under industry 4.0, Internet of Things (IoT), especially radio frequency identification (RFID) technology, has been widely applied in manufacturing environment. This technology can bring convenience to production control and production transparency. Meanwhile, it generates increasing production data that are sometimes discrete, uncorrelated, and hard-to-use. Thus, an efficient analysis method is needed to utilize the invaluable data. This work provides an RFID-based production data analysis method for production control in IoT-enabled smart job-shops. The physical configuration and operation logic of IoT-enabled smart job-shop production are firstly described. Based on that, an RFID-based production data model is built to formalize and correlate the heterogeneous production data. Then, an event driven RFID-based production data analysis method is proposed to construct the RFID events and judge the process command execution. Furthermore, a near big data approach is used to excavate hidden information and knowledge from the historical production data. A demonstrative case is studied to verify the feasibility of the proposed model and methods. It is expected that our work will provide a different insight into the RFID based production data analysis.

EXISTING SYSTEM

Internet of Things (IoT) is the network of physical objects embedded with radio frequency identification (RFID), embedded systems, sensors, network, and software that enable physical objects to collect and exchange data for a common goal. In existing, Internet of Things (IoT), especially radio frequency identification (RFID) technology, has been widely applied in manufacturing environment. This technology can bring convenience to production control and production transparency. Meanwhile, it generates increasing production data that are sometimes discrete, uncorrelated, and hard-to-use.

DRAWBACKS

- Production data is sometimes discrete, uncorrelated .
- It is hard to use.

PROPOSED SYSTEM

This paper aims to provide an insight into the RFID-based production data analysis for production control in the IoT enabled smart job-shops. The big RFID-based production data are excavated to find the hidden information, knowledge, and rules, which are invaluable for real-time production control and decision-makings. The scene of IoT-enabled smart job-shop production is firstly described, together with the configuration of RFID devices and other IoT facilities. Then, an RFID-based production data model is established to build the relationships among the heterogeneous production data. Based on that, the event-driven production data analysis method is discussed to judge the process command execution, and a near big data approach is applied to exploit information, knowledge, and rules from the historical production data. Based on that, the real-time production control can be realized, and production decision-makings can be optimized with the aid of the numerous hints from historical RFID-based production data.

ADVANTAGES

- It improves transparency, accuracy
- Efficiency in terms of production control

SYSTEM REQUIREMENTS

H/W System Configuration:-

- Processor - Pentium –IV
- RAM - 4 GB (min)
- Hard Disk - 20 GB
- Key Board - Standard Windows Keyboard
- Mouse - Two or Three Button Mouse
- Monitor - SVGA

S/W System Configuration:-

- Operating System : Windows 7 or 8 32 bit
- Application Server : Tomcat5.0/6.X
- Programming Language : Java
- Java Version : JDK 1.6 and above