Robotic manufacturing systems using internet of things

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Abstract

Damghan University, Iran Internet of Things (IoT) has been extracted as a useful tool in industry 4.0. IoT in manufacturing systems enable effective process managers to monitor and supervise the production using dispatching rules. One of the most efficient production systems is robotic one. Robots are able to process manufacturing tasks faster and with higher quality without working time constraint. The challenge is in the robot control system leading to real time decisions. To handle large amounts of data in manufacturing floor and production robot real time control, IoT is employed to deliver a mechanism through internet oriented technologies. Robotic manufacturing system is highly flexible to satisfy customized production according to customers' demands. Automation is cost-effective due to higher throughput and productivity. Thus, in this paper we aim to propose a control mechanism based on IoT for robotic manufacturing systems relaxing the issues in robot path planning and robot task scheduling. Distributed control and supervisory control and data acquisition (SCADA) is a control paradigm which is applied in industrial automation. Here, IoT-based SCADA is designed to handle online data from manufacturing departments and integrate them to propose dispatching rules for manufacturing robots. The process model is presented and certifies appropriate performance in high-tech industries.

Biography

Hamed Fazlollahtabar earned a BSc and an MSc in Industrial Engineering from Mazandaran University of Science and Technology, Iran, in 2008 and 2010, respectively. He received his PhD in Industrial and Systems Engineering from Iran University of Science and Technology in 2015, and completed a postdoctoral research fellowship at Sharif University of Technology, Iran, in the area of reliability engineering for complex systems in 2017. He currently works in the Department of Industrial Engineering at Damghan University, Iran, and is on the editorial boards of several journals and on the technical committees of several conferences. His research interests are robot path planning, reliability engineering, supply chain planning, and business intelligence and analytics. He has published more than 280 research papers and eight books.

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