

Implementation of agent based holonic control in discrete manufacturing

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ABSTRACT

The present paper is aimed at implementation of agent based holonic manufacturing control, a Distributed Problem Solving (DPS) approach that relies on the principle of dynamic team formation through negotiation and cooperation by a group of intelligent system entities. A holonic system comprising product holon, resource holon, and integrated process planning and scheduling holon is developed to execute a customer order where negotiation based task allocation and scheduling is accomplished by Contract Net Protocol (CNP). The bids submitted by the resources are evaluated by Simple Additive Weight (SAW) technique under Fuzzy Multi Criteria Decision Making (FMCDM) environment. The priority of the products is established by the critical ratios (CR) to form the basis of scheduling rule. The necessary message based communication is accomplished using eXtensible Markup Language (XML) having specific Document Type Definition (DTD). The control is implemented by Linux operating system with Java.

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