Jarvis / Rönnquist

Holonic Execution: A BDI Approach

The term “holon” was ?rst introduced by Koestler (Koestler, 1967) to c- ture the idea that both biological and social structures consisted of entities that were part of a larger whole, while being self-contained entities in their own right. These entities were called holons and the structures that they form werecalled holarchies. Inthisbook,wepresentaconceptualmodelforholonic manufacturing execution and then use this model to develop two implem- tations for an execution system for an industrial strength robotic assembly cell. The model is based on the experience that we have gained in developing a number of agent-based execution systems over the past 10 years. Manufacturingexecutionisthatactivitywhichisconcernedwiththem- agement of actual manufacturing tasks. It involves interaction with device controllers, but it is conceptually separate from manufacturing control. The applicability of the holonic concept to manufacturing was ?rst noted by Suda (Suda, 1990) and this led to the formation of the Holonic Manufacturing Systems project in 1993 (HMS Consortium, 2001). The HMS project was conducted under the auspices of the Intelligent Manufacturing Systems (IMS) program (IMS, 2005) and remains of the largest of the IMS projects to have been undertaken. The HMS project spanned three separate phases, ending in 2004. In addition, a signi?cant amount of work (including the work described in this book) was conducted outside the HMS project. Conceptually, holons are similar to agents.

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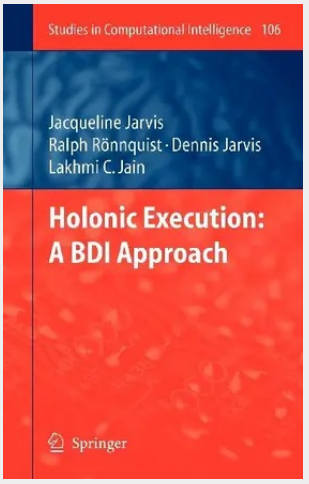

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