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Nota di contenuto	Introduction -- Part I Architectures and Knowledge Modelling for AI in Manufacturing -- Reference Architecture for AI-based Industry 5.0 Applications -- Designing a Marketplace to Exchange AI Models for Industry 4.0 -- Domain Ontology Enrichment through Human-AI Interaction -- Survey of Knowledge Graphs in Industrial Settings -- From Knowledge to Wisdom: Leveraging Semantic Representations via Knowledge Graph Embeddings -- Advancing high value-added networked production through Decentralized Technical Intelligence -- Part II AI-based Digital Twins for Manufacturing Applications -- Digital-Twin enabled framework for training and deploying AI agents for production scheduling -- Digital Twin for Human Machine Interaction -- Learning-based Collaborative Digital Twins -- A Manufacturing Digital Twin Framework -- Part III Agent based

Approaches for AI in Manufacturing -- Reinforcement Learning based approaches in manufacturing environments -- A participatory modelling approach to Agents in Industry using AAS -- 4.0 Holonic Multi-Agent Testbed Enabling Shared Production -- Application of a Multi agent system on production and scheduling optimization -- Integrating Knowledge to Conversational Agents for Worker Upskilling -- Part IV Trusted AI for Industry 5.0 Applications -- Wearable sensor-based human activity recognition for worker safety in manufacturing line -- Object detection for human-robot interaction and worker assistance systems -- Application of autoML, XAI and differential privacy method into manufacturing -- Anomaly Detection in Manufacturing -- Towards Industry 5.0 by incorporation of Trustworthy and Human-Centric approaches -- How AI changes human roles in Industry 5.0-enabled environments: Human in the AI loop via xAI and Active Learning for Manufacturing Quality Control -- Multi-Stakeholder Perspective on Human-AI Collaboration in Industry 5.0 -- Conclusion.

Sommario/riassunto

This open access book presents a rich set of innovative solutions for artificial intelligence (AI) in manufacturing. The various chapters of the book provide a broad coverage of AI systems for state of the art flexible production lines including both cyber-physical production systems (Industry 4.0) and emerging trustworthy and human-centered manufacturing systems (Industry 5.0). From a technology perspective, the book addresses a wide range of AI paradigms such as deep learning, reinforcement learning, active learning, agent-based systems, explainable AI, industrial robots, and AI-based digital twins. Emphasis is put on system architectures and technologies that foster human-AI collaboration based on trusted interactions between workers and AI systems. From a manufacturing applications perspective, the book illustrates the deployment of these AI paradigms in a variety of use cases spanning production planning, quality control, anomaly detection, metrology, workers' training, supply chain management, as well as various production optimization scenarios. This is an open access book.