Integrating Advanced Computer-Aided Design, Manufacturing, and Numerical Control: Principles and Implementations

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13-digit ISBN: 978-1-59904-714-0
424 pages; 2009 Copyright
Price: US $165.00 (hardcover*)
Pre-pub price$: US $150.00
Perpetual Access: US $140.00
Print + Perpetual Access: US $195.00
Illustrations: figures, tables (8 1/2” x 11”)
Translation Rights: World
*Paperback is not available. $Pre-pub price is good through one month after publication.

For many years, computers have been playing a prominent role in the process of product design and manufacture. As manufacturing continues to march into the future, there is a critical need to address the role of computer technologies in an integrated fashion, placing emphasis on product data exchange as well as product data management.

Integrating Advanced Computer-Aided Design, Manufacturing, and Numerical Control: Principles and Implementations presents basic principles of product modeling and manufacturing while featuring contemporary industrial case studies. A one-stop reference source for the latest international standards, and their implementations, this comprehensive title also expands beyond the traditional scope of the product development process to give a brief account on product data management (PDM) and product lifecycle management (PLM).

Subject:
Design/Manufacturing
Software/Systems Design;
Business Information Systems;
Industrial Informatics; Multimedia Technology; Artificial Intelligence

Market:
This essential publication is for all academic and research libraries, as well as anyone involved in the use of computer technology to aid in the design, drafting, manufacturing, or prototyping of a part or product. Researchers, educators, students, practitioners, engineers, machinists, and IT systems developers, will find this book unparalleled.

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Table of Contents

SECTION I: PRINCIPLES AND BACKGROUNDS

Chapter I: Geometric Modelling and Computer-Aided Design
Chapter II: CAD Data Exchange and CAD Standards
Chapter III: Computer-Aided Process Planning and Manufacturing
Chapter IV: Feature Technology
Chapter V: Feature Recognition
Chapter VI: Feature Interactions
Chapter VII: Integrated Feature Technology
Chapter VIII: CNC Machine Tools
Chapter IX: Program CNCS

SECTION II: INTEGRATION AND IMPLEMENTATIONS

Chapter X: Integration of CAD/CAPP/CAM/CNC
Chapter XI: Integration Based on Step Standards
Chapter XII: Function Block-Enabled Integration
Chapter XIII: Development of an Integrated, Adaptable CNC System
Chapter XIV: Integrating CAD/CAPP/CAM/CNC with Inspection
Chapter XV: Internet-Based Integration
Chapter XVI: From CAD/CAPP/CAM/CNC TO PDM, PLM, and Beyond
Chapter XVII: Key Enabling Technologies

Topics Covered

- Computer-aided Design (CAD)
- CAD data exchange and CAD standards
- Computer-aided process planning and manufacturing (CAPP/CAM)
- Agent-based technology
- Artificial neural network methods
- Computer numerical control (CNC)
- Integrated, adaptable CNC systems
- Feature technology
- Function block-enabled integration
- Geometric modeling
- Human-machine interface
- Product Data Management (PDM)
- Integrated feature technology
- Integration of CAD, CAPP, CAM, CNC
- STEP standards
- Key enabling technologies
- Knowledge-based systems
- Product Lifecycle Management (PLM)
- Web-based technologies

About the Author:

Xun Xu has been working in the Department of Mechanical Engineering, the University of Auckland since 1996 after obtaining a PhD from the University of Manchester, then UMIST. Dr. Xu is currently an Associate Professor of Manufacturing Systems and leads the “Intelligent and Interoperable Manufacturing Systems” research group. Dr. Xu was a Guest Researcher at the US National Institute of Standards and Technology (NIST), and a Senior Research Fellow at the Japan National Institute of Advanced Industrial Science and Technology (AIST). He has broad research interests – from CAD/CAPP/CAM/CNC to product lifecycle assessment and management, and from 3D digitisation of artefacts to re-modelling and visualization. His recent research work has been around STEP-compliant design and manufacturing, in particular STEP-NC. Dr. Xu has over 100 research publications, and is now serving in a number of Editorial Boards for international journals and has guest-edited a few special journal issues. Dr. Xu also consults extensively in industry and has very close ties with industries both in New Zealand and overseas.