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Enabling Manufacturing Competitiveness and Economic Sustainability - Hoda A. ElMaraghy 2011-09-29

The changing manufacturing environment requires more responsive and adaptable manufacturing systems. The theme of the 4th International Conference on Changeable, Agile, Reconfigurable and Virtual production (CARV2011) is “Enabling Manufacturing Competitiveness and Economic Sustainability”. Leading edge research and best implementation practices and experiences, which address these important issues and challenges, are presented. The proceedings include advances in manufacturing systems design, planning, evaluation, control and evolving paradigms such as mass customization, personalization, changeability, re-configurability and flexibility. New and important concepts such as the dynamic product families and platforms, co-evolution of products and systems, and methods for enhancing manufacturing systems’ economic sustainability and prolonging their life to produce more than one product generation are treated. Enablers of change in manufacturing systems, production volume and capability scalability and managing the volatility of markets, competition among global enterprises and the increasing complexity of products, manufacturing systems and management strategies are discussed. Industry challenges and future directions for research and development needed to help both practitioners and academicians are presented.

Managing the Design-manufacturing Process - John E. Ettl 1990

This practical guide describes the administrative practices, policies, tools, and methods that promote better coordination, and shows how design-manufacturing integration helps a company reduce costs, improve product quality, and respond quickly to customer needs and demands. It examines the issues that have traditionally prevented design-manufacturing collaboration and reports on the findings of a four-year domestic plant study of the best strategies for promoting the integration of design and manufacturing.

Advanced Design of Mechanical Systems: From Analysis to Optimization - Jorge A.C. Ambrosio 2009-11-25

Multibody systems are used extensively in the investigation of mechanical systems including structural and non-structural applications. It can be argued that among all the areas in solid mechanics the methodologies and applications associated to multibody dynamics are those that provide an ideal framework to aggregate different disciplines. This idea is clearly reflected, e. g. , in the multidisciplinary applications in biomechanics that use multibody dynamics to describe the motion of the biological entities, in finite elements where multibody dynamics provides powerful tools to describe large motion and kinematic restrictions between system components, in system control where the methodologies used in multibody dynamics are the prime form of describing the systems under analysis, or even in many applications that involve fluid-structure interaction or aero elasticity. The development of industrial products or the development of analysis tools, using multibody dynamics methodologies, requires that the final result of the developments are the best possible within some limitations, i. e. , they must be optimal.

Furthermore, the performance of the developed systems must either be relatively insensitive to some of their design parameters or be sensitive in a controlled manner to other variables. Therefore, the sensitivity analysis of such systems is fundamental to support the decision making process. This book presents a broad range of tools for designing mechanical systems ranging from the kinematic and dynamic analysis of rigid and flexible multibody systems to their advanced optimization.

Computer Aided Design and Manufacturing - Zhuming Bi 2020-02-05

Broad coverage of digital product creation, from design to manufacture and process optimization This book addresses the need to provide up-to-date coverage of current CAD/CAM usage and implementation. It covers, in one source, the entire design-to-manufacture process, reflecting the industry trend to further integrate CAD and CAM into a single, unified process. It also updates the computer aided design theory and methods in modern manufacturing systems and examines the most advanced computer-aided tools used in digital manufacturing. Computer Aided Design and Manufacturing consists of three parts. The first part on Computer Aided Design (CAD) offers the chapters on Geometric Modelling; Knowledge Based Engineering; Platforming Technology; Reverse Engineering; and Motion Simulation. The second part on Computer Aided Manufacturing (CAM) covers Group Technology and Cellular Manufacturing; Computer Aided Fixture Design; Computer Aided Manufacturing; Simulation of Manufacturing Processes; and Computer Aided Design of Tools, Dies and Molds (TDM). The final part includes the chapters on Digital Manufacturing; Additive Manufacturing; and Design for Sustainability. The book is also featured for being uniquely structured to classify and align engineering disciplines and computer aided technologies from the perspective of the design needs in whole product life cycles, utilizing a comprehensive Solidworks package (add-ins, toolbox, and library) to showcase the most critical functionalities of modern computer aided tools, and presenting real-world design projects and case studies so that readers can gain CAD and CAM problem-solving skills upon the CAD/CAM theory. Computer Aided Design and Manufacturing is an ideal textbook for undergraduate and graduate students in mechanical engineering, manufacturing engineering, and industrial engineering. It can also be used as a technical reference for researchers and engineers in mechanical and manufacturing engineering or computer-aided technologies.

Integrating Advanced Computer-Aided Design, Manufacturing, and Numerical Control: Principles and Implementations - Xu, Xun 2009-01-31

"This book presents basic principles of geometric modelling while featuring contemporary industrial case studies"-- Provided by publisher.

Product Lifecycle Management: Towards Knowledge-Rich Enterprises - Louis Rivest 2012-12-22

This book constitutes the refereed post-proceedings of the 9th IFIP WG 5.1 International Conference on Product

Lifecycle Management, PLM 2012, held in Montreal, Canada, in July 2012. The 58 full papers presented were carefully reviewed and selected from numerous submissions. They cover a large range of topics such as collaboration in PLM, tools and methodologies for PLM, modeling for PLM, and PLM implementation issues.

Frontier and Innovation in Future Computing and Communications - James J. (Jong Hyuk) Park 2014-04-18
IT technology engineering changes everyday life, especially in Computing and Communications. The goal of this book is to further explore the theoretical and practical issues of Future Computing and Communications. It also aims to foster new ideas and collaboration between researchers and practitioners.

Enterprise Interoperability - Marten van Sinderen 2013-03-22

This book constitutes the proceedings of the 5th International IFIP Working Conference on Enterprise Interoperability (IWEI 2013), held in Enschede, The Netherlands, during March 27–28, 2013. The theme for IWEI 2013 was “Information Services and Processes for the Interoperable Economy and Society.” The 15 full papers presented in this volume were carefully selected from 35 submissions. The selection was based on a thorough review process, in which each paper was reviewed by at least three experts in the field. The papers are representative of the current research activities in the area of enterprise interoperability and are grouped into six sections: enterprise service interoperability, enterprise interoperability in sectors, interoperability methodology, interoperability for specific application types, strategic and tactical aspects of enterprise interoperability, and ontology-based interoperability. Two keynotes and an invited paper complete this volume.

Concurrent Engineering Approaches for Sustainable Product Development in a Multi-Disciplinary Environment - Josip Stjepandić 2012-08-10

The CE Conference series is organized annually by the International Society for Productivity Enhancement (ISPE) and constitutes an important forum for international scientific exchange on concurrent and collaborative enterprise engineering. These international conferences attract a significant number of researchers, industrialists and students, as well as government representatives, who are interested in the recent advances in concurrent engineering research and applications. **Concurrent Engineering Approaches for Sustainable Product Development in a Multi-Disciplinary Environment: Proceedings of the 19th ISPE International Conference on Concurrent Engineering** contains papers accepted, peer reviewed and presented at the annual conference held at the University of Applied Sciences in Trier, Germany, from 3rd-7th of September 2012. This covers a wide range of cutting-edge topics including: Systems Engineering and Innovation Design for Sustainability Knowledge Engineering and Management Managing product variety Product Life-Cycle Management and Service Engineering Value Engineering

Handbook Of Manufacturing - Wang Lihui 2019-10-08

Handbook of Manufacturing provides a comprehensive overview of fundamental knowledge on manufacturing, covering various processes, manufacturing-related metrology and quality assessment and control, and manufacturing systems. Many modern processes such as additive manufacturing, micro- and nano-manufacturing, and biomedical manufacturing are also covered in this handbook. The handbook will help prepare readers for future exploration of manufacturing research as well as practical engineering applications.

Enterprise Integration and Information Architecture - Li Da Xu 2014-07-10

Enterprise solutions have emerged as promising tools for integrating and extending business processes across business functions. Supplying a clear and comprehensive introduction to the field, this book provides a detailed description of enterprise information integration-from the development of enterprise systems to extended enterprise information

Theory and Design of CNC Systems - Suk-Hwan Suh 2008-08-22

Computer Numerical Control (CNC) controllers are high value-added products counting for over 30% of the price

of machine tools. The development of CNC technology depends on the integration of technologies from many different industries, and requires strategic long-term support. “Theory and Design of CNC Systems” covers the elements of control, the design of control systems, and modern open-architecture control systems. Topics covered include Numerical Control Kernel (NCK) design of CNC, Programmable Logic Control (PLC), and the Man-Machine Interface (MMI), as well as the major modules for the development of conversational programming methods. The concepts and primary elements of STEP-NC are also introduced. A collaboration of several authors with considerable experience in CNC development, education, and research, this highly focused textbook on the principles and development technologies of CNC controllers can also be used as a guide for those working on CNC development in industry.

Advances in Production Management Systems. Competitive Manufacturing for Innovative Products and Services - Christos Emmanouilidis 2013-08-13

The two volumes IFIP AICT 397 and 398 constitute the thoroughly refereed post-conference proceedings of the International IFIP WG 5.7 Conference on Advances in Production Management Systems, APMS 2012, held in Rhodes, Greece, in September 2012. The 182 revised full papers were carefully reviewed and selected for inclusion in the two volumes. They are organized in 6 parts: sustainability; design, manufacturing and production management; human factors, learning and innovation; ICT and emerging technologies in production management; product and asset lifecycle management; and services, supply chains and operations.

Information Modeling for Interoperable Dimensional Metrology - Y Zhao 2011-08-28

Dimensional metrology is an essential part of modern manufacturing technologies, but the basic theories and measurement methods are no longer sufficient for today's digitized systems. The information exchange between the software components of a dimensional metrology system not only costs a great deal of money, but also causes the entire system to lose data integrity. **Information Modeling for Interoperable Dimensional Metrology** analyzes interoperability issues in dimensional metrology systems and describes information modeling techniques. It discusses new approaches and data models for solving interoperability problems, as well as introducing process activities, existing and emerging data models, and the key technologies of dimensional metrology systems. Written for researchers in industry and academia, as well as advanced undergraduate and postgraduate students, this book gives both an overview and an in-depth understanding of complete dimensional metrology systems. By covering in detail the theory and main content, techniques, and methods used in dimensional metrology systems, **Information Modeling for Interoperable Dimensional Metrology** enables readers to solve real-world dimensional measurement problems in modern dimensional metrology practices.

Advances on Mechanics, Design Engineering and Manufacturing III - Lionel Roucoules 2021-04-21

This open access book gathers contributions presented at the International Joint Conference on Mechanics, Design Engineering and Advanced Manufacturing (JCM 2020), held as a web conference on June 2–4, 2020. It reports on cutting-edge topics in product design and manufacturing, such as industrial methods for integrated product and process design; innovative design; and computer-aided design. Further topics covered include virtual simulation and reverse engineering; additive manufacturing; product manufacturing; engineering methods in medicine and education; representation techniques; and nautical, aeronautics and aerospace design and modeling. The book is organized into four main parts, reflecting the focus and primary themes of the conference. The contributions presented here not only provide researchers, engineers and experts in a range of industrial engineering subfields with extensive information to support their daily work; they are also intended to stimulate new research directions, advanced applications of the methods discussed and future interdisciplinary collaborations.

Handbook on Advanced Design and Manufacturing Technologies for Biomedical Devices - Andrés Díaz Lantada 2014-07-08

The last decades have seen remarkable advances in computer-aided design, engineering and manufacturing technologies, multi-variable simulation tools, medical imaging, biomimetic design, rapid prototyping, micro and nanomanufacturing methods and information management resources, all of which provide new horizons for the Biomedical Engineering fields and the Medical Device Industry. *Advanced Design and Manufacturing Technologies for Biomedical Devices* covers such topics in depth, with an applied perspective and providing several case studies that help to analyze and understand the key factors of the different stages linked to the development of a novel biomedical device, from the conceptual and design steps, to the prototyping and industrialization phases. Main research challenges and future potentials are also discussed, taking into account relevant social demands and a growing market already exceeding billions of dollars. In time, advanced biomedical devices will decisively change methods and results in the medical world, dramatically improving diagnoses and therapies for all kinds of pathologies. But if these biodevices are to fulfill present expectations, today's engineers need a thorough grounding in related simulation, design and manufacturing technologies, and collaboration between experts of different areas has to be promoted, as is also analyzed within this handbook.

Computer Supported Cooperative Work in Design III - Weiming Shen 2007-08-04

This book constitutes the thoroughly refereed post-proceedings of the 10th International Conference on Computer Supported Cooperative Work in Design, CSCWD 2006, held in Nanjing, China in May 2006. Among topics covered are CSCW techniques and methods, collaborative design, collaborative manufacturing and enterprise collaboration, Web services, knowledge management, security and privacy in CSCW systems, workflow management, and e-learning.

Product Lifecycle Management for Society - Alain Bernard 2013-11-09

This book constitutes the refereed proceedings of the 10th IFIP WG 5.1 International Conference on Product Lifecycle Management, PLM 2013, held in Nantes, France, in July 2013. The 63 full papers presented together with 2 keynote talks were carefully reviewed and selected from 91 submissions. They are organized in the following topical sections: PLM for sustainability, traceability and performance; PLM infrastructure and implementation processes; capture and reuse of product and process information; PLM and knowledge management; enterprise system integration; PLM and influence of/from social networks; PLM maturity and improvement concepts; PLM and collaborative product development; PLM virtual and simulation environments; and building information modeling.

Pervasive Cloud Computing Technologies: Future Outlooks and Interdisciplinary Perspectives - Grandinetti, Lucio 2013-10-31

Technology trends may come and go, but cloud computing technologies have been gaining consideration in the commercial world due to its ability to provide on-demand access to resources, control the software environment, and supplement existing systems. *Pervasive Cloud Computing Technologies: Future Outlooks and Interdisciplinary Perspectives* explores the latest innovations with cloud computing and the impact of these new models and technologies. This book will present case studies and research on the future of cloud computing technologies and its ability to increase connectivity of various entities of the world. It is an essential resource for technology practitioners, engineers, managers, and academics aiming to gain the knowledge of these novel and pervasive technologies.

Advanced Design and Manufacturing Based on STEP - Xun Xu 2009-09-29

Design and manufacturing is the essential element in any product development lifecycle. Industry vendors and users have been seeking a common language to be used for the entire product development lifecycle that can describe design, manufacturing and other data pertaining to the product. Many solutions were proposed, the most successful being the Standard for Exchange of Product model (STEP). STEP provides a mechanism that is capable

of describing product data, independent from any particular system. The nature of this description makes it suitable not only for neutral file exchange, but also as a basis for implementing, sharing and archiving product databases. ISO 10303-AP203 is the first and perhaps the most successful AP developed to exchange design data between different CAD systems. Going from geometric data (as in AP203) to features (as in AP224) represents an important step towards having the right type of data in a STEP-based CAD/CAM system. Of particular significance is the publication of STEP-NC, as an extension of STEP to NC, utilising feature-based concepts for CNC machining purposes. The aim of this book is to provide a snapshot of the recent research outcomes and implementation cases in the field of design and manufacturing where STEP is used as the primary data representation protocol. The 20 chapters are contributed by authors from most of the top research teams in the world. These research teams are based in national research institutes, industries as well as universities.

Cloud Manufacturing - Weidong Li 2013-03-01

Global networks, which are the primary pillars of the modern manufacturing industry and supply chains, can only cope with the new challenges, requirements and demands when supported by new computing and Internet-based technologies. *Cloud Manufacturing: Distributed Computing Technologies for Global and Sustainable Manufacturing* introduces a new paradigm for scalable service-oriented sustainable and globally distributed manufacturing systems. The eleven chapters in this book provide an updated overview of the latest technological development and applications in relevant research areas. Following an introduction to the essential features of Cloud Computing, chapters cover a range of methods and applications such as the factors that actually affect adoption of the Cloud Computing technology in manufacturing companies and new geometrical simplification method to stream 3-Dimensional design and manufacturing data via the Internet. This is further supported case studies and real life data for Waste Electrical and Electronic Equipment (WEEE) remanufacturing. This compilation of up to date research and literature can be used as a textbook or reference for mechanical, manufacturing, and computer engineering graduate students and researchers for efficient utilization, deployment and development of distributed and Cloud manufacturing systems, services and applications.

Machining of Complex Sculptured Surfaces - Joao Paulo Davim 2012-01-05

The machining of complex sculptured surfaces is a global technological topic, in modern manufacturing with relevance in both industrialized and emerging in countries, particularly within the moulds and dies sector whose applications include highly technological industries such as the automotive and aircraft industry. *Machining of Complex Sculptured Surfaces* considers new approaches to the manufacture of moulds and dies within these industries. The traditional technology employed in the manufacture of moulds and dies combined conventional milling and electro-discharge machining (EDM) but this has been replaced with high-speed milling (HSM) which has been applied in roughing, semi-finishing and finishing of moulds and dies with great success. *Machining of Complex Sculptured Surfaces* provides recent information on machining of complex sculptured surfaces including modern CAM systems and process planning for three and five axis machining as well as explanations of the advantages of HSM over traditional methods ranging from work piece precision and roughness to manual polishing following machining operations. Whilst primarily intended for engineering students and post graduates (particularly in the fields of mechanical, manufacturing or materials), *Machining of Complex Sculptured Surfaces* provides clear instructions on modern manufacturing; serving as a practical resource for all academics, researchers, engineers and industry professionals with interest in the machining of complex sculptured surfaces.

Advances in Production Management Systems: Innovative Production Management Towards Sustainable Growth - Shigeki Umeda 2015-08-17

The two volumes IFIP AICT 459 and 460 constitute the refereed proceedings of the International IFIP WG 5.7 Conference on Advances in Production Management Systems, APMS 2015, held in Tokyo, Japan, in September

2015. The 163 revised full papers were carefully reviewed and selected from 185 submissions. They are organized in the following topical sections: collaborative networks; globalization and production management; knowledge based production management; project management, engineering management, and quality management; sustainability and production management; co-creating sustainable business processes and ecosystems; open cloud computing architecture for smart manufacturing and cyber physical production systems; the practitioner's view on "innovative production management towards sustainable growth"; the role of additive manufacturing in value chain reconfiguration and sustainability; operations management in engineer-to-order manufacturing; lean production; sustainable system design for green products; cloud-based manufacturing; ontology-aided production - towards open and knowledge-driven planning and control; product-service lifecycle management: knowledge-driven innovation and social implications; and service engineering.

Cloud-Based Cyber-Physical Systems in Manufacturing - Lihui Wang 2017-11-16

This book presents state-of-the-art research, challenges and solutions in the area of cloud-based cyber-physical systems (CPS) used in manufacturing. It provides a comprehensive review of the literature and an in-depth treatment of novel methodologies, algorithms and systems in the area of architecture design, cyber security, process planning, monitoring and control. The book features detailed descriptions of how to derive solutions in a cloud environment where physical machines can be supported by cyber decision systems when engaged in real operations. It presents a range of novel ideas and is characterized by a balanced approach in terms of scope vs. depth and theory vs. applications. It also takes into account the need to present intellectual challenges while appealing to a broad readership, including academic researchers, practicing engineers and managers, and graduate students.

Dedicated to the topic of cloud-based CPS and its practical applications in manufacturing, this book benefits readers from all manufacturing sectors, from system design to lifecycle engineering and from process planning to machine control. It also helps readers to understand the present challenges and future research directions towards factories of the future, helping them to position themselves strategically for career development.

Artificial Intelligence Techniques for Networked Manufacturing Enterprises Management - Lyes Benyoucef 2010-05-10

Artificial Intelligence Techniques for Networked Manufacturing Enterprises Management addresses prominent concepts and applications of AI technologies in the management of networked manufacturing enterprises. The aim of this book is to align latest practices, innovation and case studies with academic frameworks and theories, where AI techniques are used efficiently for networked manufacturing enterprises. More specifically, it includes the latest research results and projects at different levels addressing quick-response system, theoretical performance analysis, performance and capability demonstration. The role of emerging AI technologies in the modelling, evaluation and optimisation of networked enterprises' activities at different decision levels is also covered. Artificial Intelligence Techniques for Networked Manufacturing Enterprises Management is a valuable guide for postgraduates and researchers in industrial engineering, computer science, automation and operations research.

Advances on Mechanics, Design Engineering and Manufacturing II - Francisco Cavas-Martínez 2019-04-27

This book contains the papers presented at the International Joint Conference on Mechanics, Design Engineering and Advanced Manufacturing (JCM 2018), held on 20-22 June 2018 in Cartagena, Spain. It reports on cutting-edge topics in product design and manufacturing, such as industrial methods for integrated product and process design; innovative design; and computer-aided design. Further topics covered include virtual simulation and reverse engineering; additive manufacturing; product manufacturing; engineering methods in medicine and education; representation techniques; and nautical, aeronautics and aerospace design and modeling. The book is divided into six main sections, reflecting the focus and primary themes of the conference. The contributions presented here will not only provide researchers, engineers and experts in a range of industrial engineering subfields with

extensive information to support their daily work; they are also intended to stimulate new research directions, advanced applications of the methods discussed, and future interdisciplinary collaborations.

Precision Assembly Technologies and Systems - Svetan Ratchev 2014-11-13

This book constitutes the refereed post-proceedings of the 7th IFIP WG 5.5 International Precision Assembly Seminar, IPAS 2014, held in Chamonix, France, in February 2014. The 20 revised full papers were carefully reviewed and selected from numerous submissions. The papers cover the following topics: micro-assembly processes and systems ranging from desktop factory automation and packaging of MEMS to self-assembly processes and platforms; handling and manipulation, including flexible gripper systems, fixturing and high precision actuators; tolerance management and error-compensation techniques applied at different scales of precision assembly; metrology and quality control; intelligent assembly control; process selection, modelling and planning.

Geometry of Single-point Turning Tools and Drills - Viktor P. Astakhov 2010-07-29

Geometry of Single-Point Turning Tools and Drills outlines clear objectives of cutting tool geometry selection and optimization, using multiple examples to provide a thorough explanation. It addresses several urgent problems that many present-day tool manufacturers, tool application specialists, and tool users, are facing. It is both a practical guide, offering useful, practical suggestions for the solution of common problems, and a useful reference on the most important aspects of cutting tool design, application, and troubleshooting practices. Covering emerging trends in cutting tool design, cutting tool geometry, machining regimes, and optimization of machining operations, Geometry of Single-Point Turning Tools and Drills is an indispensable source of information for tool designers, manufacturing engineers, research workers, and students.

Proceedings of the 6th CIRP-Sponsored International Conference on Digital Enterprise Technology - George Q. Huang 2009-12-12

This Proceedings volume contains articles presented at the CIRP-Sponsored International Conference on Digital Enterprise Technology (DET2009) that takes place December 14–16, 2009 in Hong Kong. This is the 6th DET conference in the series and the first to be held in Asia. Professor Paul Maropoulos initiated, hosted and chaired the 1st International DET Conference held in 2002 at the University of Durham. Since this inaugural first DET conference, DET conference series has been successfully held in 2004 at Seattle, Washington USA, in 2006 at Setubal Portugal, in 2007 at Bath England, and in 2008 at Nantes France. The DET2009 conference continues to bring together International expertise from the academic and industrial fields, pushing forward the boundaries of research knowledge and best practice in digital enterprise technology for design and manufacturing, and logistics and supply chain management. Over 120 papers from over 10 countries have been accepted for presentation at DET2009 and inclusion in this Proceedings volume after stringent refereeing process. On behalf of the organizing and program committees, the Editors are grateful to the many people who have made DET2009 possible: to the authors and presenters, especially the keynote speakers, to those who have diligently reviewed submissions, to members of International Scientific Committee, Organizing Committee and Advisory Committee, and to colleagues for their hard work in sorting out all the arrangements. We would also like to extend our gratitude to DET2009 sponsors, co-organizers, and supporting organizations.

Model-Driven Engineering and Software Development - Luís Ferreira Pires 2018-07-07

This book constitutes thoroughly revised and selected papers from the 5th International Conference on Model-Driven Engineering and Software Development, MODELSWARD 2017, held in Porto, Portugal, in February 2017. The 20 thoroughly revised and extended papers presented in this volume were carefully reviewed and selected from 91 submissions. They contribute to the development of highly relevant research trends in model-driven engineering and software development such as methodologies for MDD development and exploitation, model-based testing, model simulation, domain-specific modeling, code generation from models, new MDD tools,

multi-model management, model evolution, and industrial applications of model-based methods and technologies.

20th ISPE International Conference on Concurrent Engineering - C. Bil 2013-09-12

As a concept, Concurrent Engineering (CE) initiates processes with the goal of improving product quality, production efficiency and overall customer satisfaction. Services are becoming increasingly important to the economy, with more than 60% of the GDP in Japan, the USA, Germany and Russia deriving from service-based activities. The definition of a product has evolved from the manufacturing and supplying of goods only, to providing goods with added value, to eventually promoting a complete service business solution, with support from introduction into service and from operations to decommissioning. This book presents the proceedings of the 20th ISPE International Conference on Concurrent Engineering, held in Melbourne, Australia, in September 2013. The conference had as its theme Product and Service Engineering in a Dynamic World, and the papers explore research results, new concepts and insights covering a number of topics, including service engineering, cloud computing and digital manufacturing, knowledge-based engineering and sustainability in concurrent engineering.

Modern Mechanical Engineering - J. Paulo Davim 2014-01-07

This book covers modern subjects of mechanical engineering such as nanomechanics and nanotechnology, mechatronics and robotics, computational mechanics, biomechanics, alternative energies, sustainability as well as all aspects related with mechanical engineering education. The chapters help enhance the understanding of both the fundamentals of mechanical engineering and its application to the solution of problems in modern industry. This book is suitable for students, both in final undergraduate mechanical engineering courses or at the graduate level. It also serves as a useful reference for academics, mechanical engineering researchers, mechanical, materials and manufacturing engineers, professionals in related with mechanical engineering.

Artificial Neural Network Applications in Business and Engineering - Do, Quang Hung 2021-01-08

In today's modernized market, various disciplines continue to search for universally functional technologies that improve upon traditional processes. Artificial neural networks are a set of statistical modeling tools that are capable of processing nonlinear data with strong accuracy. Due to their complexity, utilizing their potential was previously seen as a challenge. However, with the development of artificial intelligence, this technology has proven to be an effective and efficient problem-solving method. Artificial Neural Network Applications in Business and Engineering is an essential reference source that illustrates recent advancements of artificial neural networks in various professional fields, accompanied by specific case studies and practical examples. Featuring research on topics such as training algorithms, transportation, and computer security, this book is ideally designed for researchers, students, developers, managers, engineers, academicians, industrialists, policymakers, and educators seeking coverage on modern trends in artificial neural networks and their real-world implementations.

International Conference on Manufacturing Automation - X. Y. Shao 2004-12-27

The proceedings of the fourth ICMA in 2004 represent a huge contribution to research in this area. Everyone attending the conference was asked to submit their papers electronically which meant that 100 top quality papers from no less than 10 different countries contributed to the theme of the conference.

Precision Nanometrology - Wei Gao 2010-06-14

Precision Nanometrology describes the new field of precision nanometrology, which plays an important part in nanoscale manufacturing of semiconductors, optical elements, precision parts and similar items. It pays particular attention to the measurement of surface forms of precision workpieces and to stage motions of precision machines. The first half of the book is dedicated to the description of optical sensors for the measurement of angle and displacement, which are fundamental quantities for precision nanometrology. The second half presents a number of scanning-type measuring systems for surface forms and stage motions. The systems discussed include: • error separation algorithms and systems for measurement of straightness and roundness, • the measurement of micro-

aspherics, • systems based on scanning probe microscopy, and • scanning image-sensor systems. Precision Nanometrology presents the fundamental and practical technologies of precision nanometrology with a helpful selection of algorithms, instruments and experimental data. It will be beneficial for researchers, engineers and postgraduate students involved in precision engineering, nanotechnology and manufacturing.

Global Product Development - Alain Bernard 2011-05-05

This book of proceedings is the synthesis of all the papers, including keynotes presented during the 20th CIRP Design conference. The book is structured with respect to several topics, in fact the main topics that serve at structuring the program. For each of them, high quality papers are provided. The main topic of the conference was Global Product Development. This includes technical, organizational, informational, theoretical, environmental, performance evaluation, knowledge management, and collaborative aspects. Special sessions were related to innovation, in particular extraction of knowledge from patents.

Design for Manufacturing and Assembly - O. Molloy 1998-03-31

In order to compete in the current commercial environment companies must produce greater product variety, at lower cost, all within a reduced product life cycle. To achieve this, a concurrent engineering philosophy is often adopted. In many cases the main realization of this is Design for Manufacture and Assembly (DFM/A). There is a need for in-depth study of the architectures for DFM/A systems in order that the latest software and knowledge-based techniques may be used to deliver the DFM/A systems of tomorrow. This architecture must be based upon complete understanding of the issues involved in integrating the design and manufacturing domains. This book provides a comprehensive view of the capabilities of advanced DFM/A systems based on a common architecture.

Mass Customization - Flavio S. Fogliatto 2010-11-09

Mass customization (MC) has been hailed as a successful operations strategy across manufacturing and service industries for the past three decades. However, the wider implications of using MC approaches in the broader industrial and economic environment are not yet clearly understood. Mass Customization: Engineering and Managing Global Operations presents emerging research on the role of MC and personalization in today's international operations context. The chapters cover MC in the context of global industrial economics and operations. Moreover, the book discusses MC topics that are relevant to the manufacturing and service sectors, such as: • product platforms; • learning curve modeling; • additive manufacturing; and • service customization. Case studies in manufacturing (e.g., apparel and transportation) and services (e.g., banking and virtual worlds) are also included. Mass Customization: Engineering and Managing Global Operations is a valuable text for mass customization researchers and practitioners. Researchers will find a selection of chapters prepared by internationally renowned authors, comprising most of their recent research in MC. Engineering professionals will be drawn by the vivid discussion of operational aspects and methods of MC, as well as by the selection of cases illustrating their practical application.

Smart Product Engineering - Michael Abramovici 2013-03-14

The collection of papers in this book comprises the proceedings of the 23rd CIRP Design Conference held between March 11th and March 13th 2013 at the Ruhr-Universität Bochum in Germany. The event was organized in cooperation with the German Academic Society for Product Development – WiGeP. The focus of the conference was on »Smart Product Engineering«, covering two major aspects of modern product creation: the development of intelligent (“smart”) products as well as the new (“smart”) approach of engineering, explicitly taking into account consistent systems integration. Throughout the 97 papers contained in these proceedings, a range of topics are covered, amongst them the different facets and aspects of what makes a product or an engineering solution “smart”. In addition, the conference papers investigate new ways of engineering for production planning and collaboration towards Smart Product Engineering. The publications provide a solid insight into the pressing issues of modern

digital product creation facing increasing challenges in a rapidly changing industrial environment. They also give implicit advice how a “smart” product or engineering solution (processes, methods and tools) needs to be designed and implemented in order to become successful.

Modular Programming of Adaptive CAx Manufacturing Process Chains (E-Book) - Gunter Spöcker 2016-11-07

The manufacturing industry is undergoing major changes due to current trends like mass-customization and

Industrie 4.0. However, today's CAx systems and approaches are not suitable to handle adaptive CAx process chains. To overcome this situation and to close the gaps between the existing CAx environment and the requirements for the manufacturing of the future, a modular approach based on extended function blocks is presented. The proposed approach is verified based on the use case of a worn-out BLIR segment by using repair features.