

Data Modeling Of Workflow Xml Resource Model

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Enterprise Resource Planning: Concepts, Methodologies, Tools, and

Applications - Management Association, Information Resources 2013-06-30

The design, development, and use of suitable enterprise resource planning systems continue play a significant role in ever-evolving business needs and environments. Enterprise Resource Planning: Concepts, Methodologies, Tools, and Applications presents research on the progress of ERP systems and their impact on changing business needs and evolving technology. This collection of research highlights a simple framework for identifying the critical factors of ERP implementation and statistical analysis to adopt its various concepts.

Useful for industry leaders, practitioners, and researchers in the field.

Grid Technologies - M. P. Bekakos 2006

Grid computing denotes an approach to utilize distributed resources that are not subject to centralized control. This approach fulfils computing requirements arising within the context of current high-performance computing applications, especially in the field of computational science and engineering. This idea is analogous to an electric power network (grid), where power generators are distributed, but the users are able to access electric

power without bothering about the source of energy and its location. Current grid enabling technologies consist of stand-alone architectures. A typical architecture provides middleware access to various services at different hierarchical levels. Computational grids enable the sharing, selection and aggregation of a wide variety of geographically distributed computational resources (such as supercomputers, clusters of computers, storage systems, data sources, instruments, people, etc.) and present them as a single, unified resource for solving large-scale computations and data intensive computing applications (e.g., molecular modeling for drug design, brain activity analysis, high energy physics, etc.). Grid computing is a new emerging research area aiming to promote the development and advancement of technologies that provide seamless and scalable access to wide-area distributed resources.

[Practical Solar Tracking Automatic Solar Tracking Sun Tracking](#)

[Автоматическое удержание Солнечная слежения ВС](#)

Gerro Prinsloo 2015-11-01

This book details Practical Solar Energy Harvesting, Automatic Solar-Tracking, Sun-Tracking-Systems, Solar-Trackers and Sun Tracker Systems

using motorized automatic positioning concepts and control principles. An intelligent automatic solar tracker is a device that orients a payload toward the sun. Such programmable computer based solar tracking device includes principles of solar tracking, solar tracking systems, as well as microcontroller, microprocessor and/or PC based solar tracking control to orientate solar reflectors, solar lenses, photovoltaic panels or other optical configurations towards the sun. Motorized space frames and kinematic systems ensure motion dynamics and employ drive technology and gearing principles to steer optical configurations such as mangin, parabolic, conic, or cassegrain solar energy collectors to face the sun and follow the sun movement contour continuously. In general, the book may benefit solar research and solar energy applications in countries such as Africa, Mediterranean, Italy, Spain, Greece, USA, Mexico, South America, Brazilia, Argentina, Chili, India, Malaysia, Middle East, UAE, Russia, Japan and China. This book on practical automatic Solar-Tracking Sun-Tracking is in .PDF format and can easily be converted to the .EPUB .MOBI .AZW .ePub .FB2 .LIT .LRF .MOBI .PDB .PDF .TCR formats for smartphones and Kindle by using the ebook.online-convert.com facility. The content of the book is also applicable to communication antenna satellite tracking and moon tracking algorithm source code for which links to free download links are provided. In harnessing power from the sun through a solar tracker or practical solar tracking system, renewable energy control automation systems require automatic solar tracking software and solar position algorithms to accomplish dynamic motion control with control automation architecture, circuit boards and hardware. On-axis sun tracking system such as the altitude-azimuth dual axis or multi-axis solar tracker systems use a sun tracking algorithm or ray tracing sensors or software to ensure the sun's passage through the sky is traced with high precision in automated solar tracker applications, right through summer solstice, solar equinox and winter solstice. A high precision sun position calculator or sun

position algorithm is this an important step in the design and construction of an automatic solar tracking system. From sun tracing software perspective, the sonnet Tracing The Sun has a literal meaning. Within the context of sun track and trace, this book explains that the sun's daily path across the sky is directed by relatively simple principles, and if grasped/understood, then it is relatively easy to trace the sun with sun following software. Sun position computer software for tracing the sun are available as open source code, sources that is listed in this book. Ironically there was even a system called sun chaser, said to have been a solar positioner system known for chasing the sun throughout the day. Using solar equations in an electronic circuit for automatic solar tracking is quite simple, even if you are a novice, but mathematical solar equations are over complicated by academic experts and professors in text-books, journal articles and internet websites. In terms of solar hobbies, scholars, students and Hobbyist's looking at solar tracking electronics or PC programs for solar tracking are usually overcome by the sheer volume of scientific material and internet resources, which leaves many developers in frustration when search for simple experimental solar tracking source-code for their on-axis sun-tracking systems. This booklet will simplify the search for the mystical sun tracking formulas for your sun tracker innovation and help you develop your own autonomous solar tracking controller. By directing the solar collector directly into the sun, a solar harvesting means or device can harness sunlight or thermal heat. This is achieved with the help of sun angle formulas, solar angle formulas or solar tracking procedures for the calculation of sun's position in the sky. Automatic sun tracking system software includes algorithms for solar altitude azimuth angle calculations required in following the sun across the sky. In using the longitude, latitude GPS coordinates of the solar tracker location, these sun tracking software tools supports precision solar tracking by determining the solar altitude-azimuth coordinates for the sun trajectory in altitude-azimuth tracking at the tracker location, using certain

sun angle formulas in sun vector calculations. Instead of follow the sun software, a sun tracking sensor such as a sun sensor or webcam or video camera with vision based sun following image processing software can also be used to determine the position of the sun optically. Such optical feedback devices are often used in solar panel tracking systems and dish tracking systems. Dynamic sun tracing is also used in solar surveying, DNI analyser and sun surveying systems that build solar infographics maps with solar radiance, irradiance and DNI models for GIS (geographical information system). In this way geospatial methods on solar/environment interaction makes use use of geospatial technologies (GIS, Remote Sensing, and Cartography). Climatic data and weather station or weather center data, as well as queries from sky servers and solar resource database systems (i.e. on DB2, Sybase, Oracle, SQL, MySQL) may also be associated with solar GIS maps. In such solar resource modelling systems, a pyranometer or solarimeter is normally used in addition to measure direct and indirect, scattered, dispersed, reflective radiation for a particular geographical location. Sunlight analysis is important in flash photography where photographic lighting are important for photographers. GIS systems are used by architects who add sun shadow applets to study architectural shading or sun shadow analysis, solar flux calculations, optical modelling or to perform weather modelling. Such systems often employ a computer operated telescope type mechanism with ray tracing program software as a solar navigator or sun tracer that determines the solar position and intensity. The purpose of this booklet is to assist developers to track and trace suitable source-code and solar tracking algorithms for their application, whether a hobbyist, scientist, technician or engineer. Many open-source sun following and tracking algorithms and source-code for solar tracking programs and modules are freely available to download on the internet today. Certain proprietary solar tracker kits and solar tracking controllers include a software development kit SDK for its application

programming interface API attributes (Pebble). Widget libraries, widget toolkits, GUI toolkit and UX libraries with graphical control elements are also available to construct the graphical user interface (GUI) for your solar tracking or solar power monitoring program. The solar library used by solar position calculators, solar simulation software and solar contour calculators include machine program code for the solar hardware controller which are software programmed into Micro-controllers, Programmable Logic Controllers PLC, programmable gate arrays, Arduino processor or PIC processor. PC based solar tracking is also high in demand using C++, Visual Basic VB, as well as MS Windows, Linux and Apple Mac based operating systems for sun path tables on Matlab, Excel. Some books and internet webpages use other terms, such as: sun angle calculator, sun position calculator or solar angle calculator. As said, such software code calculate the solar azimuth angle, solar altitude angle, solar elevation angle or the solar Zenith angle (Zenith solar angle is simply referenced from vertical plane, the mirror of the elevation angle measured from the horizontal or ground plane level). Similar software code is also used in solar calculator apps or the solar power calculator apps for IOS and Android smartphone devices. Most of these smartphone solar mobile apps show the sun path and sun-angles for any location and date over a 24 hour period. Some smartphones include augmented reality features in which you can physically see and look at the solar path through your cell phone camera or mobile phone camera at your phone's specific GPS location. In the computer programming and digital signal processing (DSP) environment, (free/open source) program code are available for VB, .Net, Delphi, Python, C, C+, C++, PHP, Swift, ADM, F, Flash, Basic, QBasic, GBasic, KBasic, SIMPL language, Squirrel, Solaris, Assembly language on operating systems such as MS Windows, Apple Mac, DOS or Linux OS. Software algorithms predicting position of the sun in the sky are commonly available as graphical programming platforms such as Matlab (Mathworks), Simulink models, Java

applets, TRNSYS simulations, Scada system apps, Labview module, Beckhoff TwinCAT (Visual Studio), Siemens SPA, mobile and iphone apps, Android or iOS tablet apps, and so forth. At the same time, PLC software code for a range of sun tracking automation technology can follow the profile of sun in sky for Siemens, HP, Panasonic, ABB, Allan Bradley, OMRON, SEW, Festo, Beckhoff, Rockwell, Schneider, Endress Hauser, Fudji electric. Honeywell, Fuchs, Yokonawa, or Muthibishi platforms. Sun path projection software are also available for a range of modular IPC embedded PC motherboards, Industrial PC, PLC (Programmable Logic Controller) and PAC (Programmable Automation Controller) such as the Siemens S7-1200 or Siemens Logo, Beckhoff IPC or CX series, OMRON PLC, Ercam PLC, AC500plc ABB, National Instruments NI PXI or NI cRIO, PIC processor, Intel 8051/8085, IBM (Cell, Power, Brain or Truenorth series), FPGA (Xilinx Altera Nios), Intel, Xeon, Atmel megaAVR, MPU, Maple, Teensy, MSP, XMOS, Xbee, ARM, Raspberry Pi, Eagle, Arduino or Arduino AtMega microcontroller, with servo motor, stepper motor, direct current DC pulse width modulation PWM (current driver) or alternating current AC SPS or IPC variable frequency drives VFD motor drives (also termed adjustable-frequency drive, variable-speed drive, AC drive, micro drive or inverter drive) for electrical, mechatronic, pneumatic, or hydraulic solar tracking actuators. The above motion control and robot control systems include analogue or digital interfacing ports on the processors to allow for tracker angle orientation feedback control through one or a combination of angle sensor or angle encoder, shaft encoder, precision encoder, optical encoder, magnetic encoder, direction encoder, rotational encoder, chip encoder, tilt sensor, inclination sensor, or pitch sensor. Note that the tracker's elevation or zenith axis angle may be measured using an altitude angle-, declination angle-, inclination angle-, pitch angle-, or vertical angle-, zenith angle- sensor or inclinometer. Similarly the tracker's azimuth axis angle be measured with a azimuth angle-,

horizontal angle-, or roll angle- sensor. Chip integrated accelerometer magnetometer gyroscope type angle sensors can also be used to calculate displacement. Other options include the use of thermal imaging systems such as a Fluke thermal imager, or robotic or vision based solar tracker systems that employ face tracking, head tracking, hand tracking, eye tracking and car tracking principles in solar tracking. With unattended decentralised rural, island, isolated, or autonomous off-grid power installations, remote control, monitoring, data acquisition, digital datalogging and online measurement and verification equipment becomes crucial. It assists the operator with supervisory control to monitor the efficiency of remote renewable energy resources and systems and provide valuable web-based feedback in terms of CO2 and clean development mechanism (CDM) reporting. A power quality analyser for diagnostics through internet, WiFi and cellular mobile links is most valuable in frontline troubleshooting and predictive maintenance, where quick diagnostic analysis is required to detect and prevent power quality issues. Solar tracker applications cover a wide spectrum of solar applications and solar assisted application, including concentrated solar power generation, solar desalination, solar water purification, solar steam generation, solar electricity generation, solar industrial process heat, solar thermal heat storage, solar food dryers, solar water pumping, hydrogen production from methane or producing hydrogen and oxygen from water (HHO) through electrolysis. Many patented or non-patented solar apparatus include tracking in solar apparatus for solar electric generator, solar desalinators, solar steam engine, solar ice maker, solar water purifier, solar cooling, solar refrigeration, USB solar charger, solar phone charging, portable solar charging tracker, solar coffee brewing, solar cooking or solar drying means. Your project may be the next breakthrough or patent, but your invention is held back by frustration in search for the sun tracker you require for your solar powered appliance, solar generator, solar tracker robot, solar freezer, solar cooker, solar drier, solar

pump, solar freezer, or solar dryer project. Whether your solar electronic circuit diagram include a simplified solar controller design in a solar electricity project, solar power kit, solar hobby kit, solar steam generator, solar hot water system, solar ice maker, solar desalinator, hobbyist solar panels, hobby robot, or if you are developing professional or hobby electronics for a solar utility or micro scale solar powerplant for your own solar farm or solar farming, this publication may help accelerate the development of your solar tracking innovation. Lately, solar polygeneration, solar trigeneration (solar triple generation), and solar quad generation (adding delivery of steam, liquid/gaseous fuel, or capture food-grade CO₂) systems have need for automatic solar tracking. These systems are known for significant efficiency increases in energy yield as a result of the integration and re-use of waste or residual heat and are suitable for compact packaged micro solar powerplants that could be manufactured and transported in kit-form and operate on a plug-and play basis. Typical hybrid solar power systems include compact or packaged solar micro combined heat and power (CHP or mCHP) or solar micro combined, cooling, heating and power (CCHP, CHPC, mCCHP, or mCHPC) systems used in distributed power generation. These systems are often combined in concentrated solar CSP and CPV smart microgrid configurations for off-grid rural, island or isolated microgrid, minigrid and distributed power renewable energy systems. Solar tracking algorithms are also used in modelling of trigeneration systems using Matlab Simulink (Modelica or TRNSYS) platform as well as in automation and control of renewable energy systems through intelligent parsing, multi-objective, adaptive learning control and control optimization strategies. Solar tracking algorithms also find application in developing solar models for country or location specific solar studies, for example in terms of measuring or analysis of the fluctuations of the solar radiation (i.e. direct and diffuse radiation) in a particular area. Solar DNI, solar irradiance and atmospheric information and models can thus be

integrated into a solar map, solar atlas or geographical information systems (GIS). Such models allows for defining local parameters for specific regions that may be valuable in terms of the evaluation of different solar in photovoltaic of CSP systems on simulation and synthesis platforms such as Matlab and Simulink or in linear or multi-objective optimization algorithm platforms such as COMPOSE, EnergyPLAN or DER-CAM. A dual-axis solar tracker and single-axis solar tracker may use a sun tracker program or sun tracker algorithm to position a solar dish, solar panel array, heliostat array, PV panel, solar antenna or infrared solar nantenna. A self-tracking solar concentrator performs automatic solar tracking by computing the solar vector. Solar position algorithms (TwinCAT, SPA, or PSA Algorithms) use an astronomical algorithm to calculate the position of the sun. It uses astronomical software algorithms and equations for solar tracking in the calculation of sun's position in the sky for each location on the earth at any time of day. Like an optical solar telescope, the solar position algorithm pin-points the solar reflector at the sun and locks onto the sun's position to track the sun across the sky as the sun progresses throughout the day. Optical sensors such as photodiodes, light-dependant-resistors (LDR) or photoresistors are used as optical accuracy feedback devices. Lately we also included a section in the book (with links to microprocessor code) on how the PixArt Wii infrared camera in the Wii remote or Wiimote may be used in infrared solar tracking applications. In order to harvest free energy from the sun, some automatic solar positioning systems use an optical means to direct the solar tracking device. These solar tracking strategies use optical tracking techniques, such as a sun sensor means, to direct sun rays onto a silicon or CMOS substrate to determine the X and Y coordinates of the sun's position. In a solar mems sun-sensor device, incident sunlight enters the sun sensor through a small pin-hole in a mask plate where light is exposed to a silicon substrate. In a web-camera or camera image processing sun tracking and sun following means, object tracking software

performs multi object tracking or moving object tracking methods. In an solar object tracking technique, image processing software performs mathematical processing to box the outline of the apparent solar disc or sun blob within the captured image frame, while sun-localization is performed with an edge detection algorithm to determine the solar vector coordinates. An automated positioning system help maximize the yields of solar power plants through solar tracking control to harness sun's energy. In such renewable energy systems, the solar panel positioning system uses a sun tracking techniques and a solar angle calculator in positioning PV panels in photovoltaic systems and concentrated photovoltaic CPV systems. Automatic on-axis solar tracking in a PV solar tracking system can be dual-axis sun tracking or single-axis sun solar tracking. It is known that a motorized positioning system in a photovoltaic panel tracker increase energy yield and ensures increased power output, even in a single axis solar tracking configuration. Other applications such as robotic solar tracker or robotic solar tracking system uses robotica with artificial intelligence in the control optimization of energy yield in solar harvesting through a robotic tracking system. Automatic positioning systems in solar tracking designs are also used in other free energy generators, such as concentrated solar thermal power CSP and dish Stirling systems. The sun tracking device in a solar collector in a solar concentrator or solar collector Such a performs on-axis solar tracking, a dual axis solar tracker assists to harness energy from the sun through an optical solar collector, which can be a parabolic mirror, parabolic reflector, Fresnel lens or mirror array/matrix. A parabolic dish or reflector is dynamically steered using a transmission system or solar tracking slew drive mean. In steering the dish to face the sun, the power dish actuator and actuation means in a parabolic dish system optically focusses the sun's energy on the focal point of a parabolic dish or solar concentrating means. A Stirling engine, solar heat pipe, thermosyphin, solar phase change material PCM receiver, or a fibre optic sunlight receiver means

is located at the focal point of the solar concentrator. The dish Stirling engine configuration is referred to as a dish Stirling system or Stirling power generation system. Hybrid solar power systems (used in combination with biogas, biofuel, petrol, ethanol, diesel, natural gas or PNG) use a combination of power sources to harness and store solar energy in a storage medium. Any multitude of energy sources can be combined through the use of controllers and the energy stored in batteries, phase change material, thermal heat storage, and in cogeneration form converted to the required power using thermodynamic cycles (organic Rankin, Brayton cycle, micro turbine, Stirling) with an inverter and charge controller. В этой книге подробно Автоматическая Solar-Tracking, BC-Tracking-Systems, Solar-трекеры и BC Tracker Systems. Интеллектуальный автоматический солнечной слежения является устройством, которое ориентирует полезную нагрузку к солнцу. Такое программируемый компьютер на основе солнечной устройство слежения включает принципы солнечной слежения, солнечных систем слежения, а также микроконтроллер, микропроцессор и / или ПК на базе управления солнечной отслеживания ориентироваться солнечных отражателей, солнечные линзы, фотоэлектрические панели или другие оптические конфигурации к BC Моторизованные космические кадры и кинематические системы обеспечения динамики движения и использовать приводной техники и готовится принципы, чтобы направить оптические конфигурации, такие как Манжен, параболических, конических или Кассегрена солнечных коллекторов энергии, чтобы лицом к солнцу и следовать за солнцем контур движения непрерывно. В обуздывать силу от солнца через солнечный трекер или практической солнечной системы слежения, системы возобновляемых контроля энергии автоматизации требуют автоматического солнечной отслеживания программного обеспечения и алгоритмов солнечные позиции для достижения динамического

контроля движения с архитектуры автоматизации управления, печатных плат и аппаратных средств. На оси системы слежения ВС, таких как высота-азимут двойной оси или многоосевые солнечные системы трекер использовать алгоритм отслеживания солнца или трассировки лучей датчиков или программное обеспечение, чтобы обеспечить прохождение солнца по небу прослеживается с высокой точностью в автоматизированных приложений Солнечная Tracker , прямо через летнего солнцестояния, солнечного равноденствия и зимнего солнцестояния.Высокая точность позиции ВС калькулятор или положение солнца алгоритм это важный шаг в проектировании и строительстве автоматической системой солнечной слежения.

PC Traceability and Compliance of Semi-Structured Processes (TC4SP 2011), and Workflow Security Audit and Certification (WfSAC 2011). In addition, the proceedings also include the Process Mining Manifesto (as an Open Access Paper), which has been jointly developed by more than 70 scientists, consultants, software vendors, and end-users. LNBIP 99 contains the revised and extended papers from BPD 2011, BPI 2011 (including the Process Mining Manifesto), BPMS2 2011, CEC 2011, ER-BPM 2011, and edBPM 2011.

Big Data Analytics - Anirban Mondal 2018-12-11

This book constitutes the refereed proceedings of the 6th International Conference on Big Data analytics, BDA 2018, held in Warangal, India, in December 2018. The 29 papers presented in this volume were carefully reviewed and selected from 93 submissions. The papers are organized in topical sections named: big data analytics: vision and perspectives; financial data analytics and data streams; web and social media data; big data systems and frameworks; predictive analytics in healthcare and agricultural domains;

and machine learning and pattern mining.

Business Process Management Workshops - Florian Daniel 2012-01-25
 LNBIP 99 and LNBIP 100 together constitute the thoroughly refereed proceedings of 12 international workshops held in Clermont-Ferrand, France, in conjunction with the 9th International Conference on Business Process Management, BPM 2011, in August 2011. The 12 workshops focused on Business Process Design (BPD 2011), Business Process Intelligence (BPI 2011), Business Process Management and Social Software (BPMS2 2011), Cross-Enterprise Collaboration (CEC 2011), Empirical Research in Business Process Management (ER-BPM 2011), Event-Driven Business Process Management (edBPM 2011), Process Model Collections (PMC 2011), Process-Aware Logistics Systems (PALS 2011), Process-Oriented Systems in Healthcare (ProHealth 2011), Reuse in Business Process Management (rBPM 2011), , Traceability and Compliance of Semi-Structured Processes (TC4SP 2011), and Workflow Security Audit and Certification (WfSAC 2011). In addition, the proceedings also include the Process Mining Manifesto (as an Open Access Paper), which has been jointly developed by more than 70 scientists, consultants, software vendors, and end-users. LNBIP 99 contains the revised and extended papers from BPD 2011, BPI 2011 (including the Process Mining Manifesto), BPMS2 2011, CEC 2011, ER-BPM 2011, and edBPM 2011.

Business Information Systems: Concepts, Methodologies, Tools and Applications - Management Association, Information Resources 2010-06-30

Business Information Systems: Concepts, Methodologies, Tools and Applications offers a complete view of current business information systems within organizations and the advancements that technology has provided to the business community. This four-volume reference uncovers how technological advancements have revolutionized financial transactions, management infrastructure, and knowledge workers.

Hadoop Application Architectures - Mark Grover 2015-06-30

Get expert guidance on architecting end-to-end data management solutions with Apache Hadoop. While many sources explain how to use various components in the Hadoop ecosystem, this practical book takes you through architectural considerations necessary to tie those components together into a complete tailored application, based on your particular use case. To reinforce those lessons, the book's second section provides detailed examples of architectures used in some of the most commonly found Hadoop applications. Whether you're designing a new Hadoop application, or planning to integrate Hadoop into your existing data infrastructure, *Hadoop Application Architectures* will skillfully guide you through the process. This book covers: Factors to consider when using Hadoop to store and model data Best practices for moving data in and out of the system Data processing frameworks, including MapReduce, Spark, and Hive Common Hadoop processing patterns, such as removing duplicate records and using windowing analytics Giraph, GraphX, and other tools for large graph processing on Hadoop Using workflow orchestration and scheduling tools such as Apache Oozie Near-real-time stream processing with Apache Storm, Apache Spark Streaming, and Apache Flume Architecture examples for clickstream analysis, fraud detection, and data warehousing

Business Process Management - Akhil Kumar 2018-02-02

This book introduces students to business process management, an approach that aims to align the organization's business processes with the demands of the marketplace. Processes serve as a coordination mechanism, and the aim of business process management is to improve the organization's effectiveness and efficiency in adapting to change, and maintaining competitive advantage. In *Business Process Management*, Kumar argues for the value of looking at businesses as a collection of processes that cut across departments, and for breaking down functional silos. The book provides an overview of the basic concepts in this field before moving on to more advanced topics such as

process verification, flexible processes, process security and evaluation, resource assignment, and social networks. The book concludes with an examination of the future directions of the discipline. Blending a strong grounding in current research with a focus on concepts and tools, *Business Process Management* is an accessible textbook full of practical examples and cases that will appeal to upper level students.

Biomedical Informatics - Edward H. Shortliffe 2021-05-31

This 5th edition of this essential textbook continues to meet the growing demand of practitioners, researchers, educators, and students for a comprehensive introduction to key topics in biomedical informatics and the underlying scientific issues that sit at the intersection of biomedical science, patient care, public health and information technology (IT). Emphasizing the conceptual basis of the field rather than technical details, it provides the tools for study required for readers to comprehend, assess, and utilize biomedical informatics and health IT. It focuses on practical examples, a guide to additional literature, chapter summaries and a comprehensive glossary with concise definitions of recurring terms for self-study or classroom use.

Biomedical Informatics: Computer Applications in Health Care and Biomedicine reflects the remarkable changes in both computing and health care that continue to occur and the exploding interest in the role that IT must play in care coordination and the melding of genomics with innovations in clinical practice and treatment. New and heavily revised chapters have been introduced on human-computer interaction, mHealth, personal health informatics and precision medicine, while the structure of the other chapters has undergone extensive revisions to reflect the developments in the area. The organization and philosophy remain unchanged, focusing on the science of information and knowledge management, and the role of computers and communications in modern biomedical research, health and health care.

Earth System Modelling - Volume 5 - Rupert Ford 2012-01-05

Collected articles in this series are dedicated to the development and use of software for earth system modelling and aims at bridging the gap between IT solutions and climate science. The particular topic covered in this volume addresses the process of configuring, building, and running earth system models. Earth system models are typically a collection of interacting computer codes (often called components) which together simulate the earth system. Each code component is written to model some physical process which forms part of the earth system (such as the Ocean). This book is concerned with the source code version control of these code components, the configuration of these components into earth system models, the creation of executable(s) from the component source code and related libraries and the running and monitoring of the resultant executables on the available hardware.

Foundations for a Social Workflow Platform - M. Sebastian E. K. Görg
2016-04-15

Sebastian Görg introduces social workflows as a new application domain for Process-Aware Information Systems and draws the design of a social workflow platform that enables private individuals to make use of workflow technology in their everyday lives. Whenever a group of persons works together on a challenging or multifaceted task, a social workflow begins. In textual form, such social workflows are already described and shared in various Internet communities which provide experiential knowledge for achieving different goals, in areas like home repair, vacation trips and computer troubleshooting. The envisioned platform enables its users to construct social workflows according to their specific needs, to share them with a community and to keep track of the execution.

Advances in Conceptual Modeling - Silvana Castano 2012-10-14

This book constitutes the refereed proceedings of workshops, held at the 31st International Conference on Conceptual Modeling, ER 2012, in Florence, Italy in October 2012. The 32 revised papers presented together with 6

demonstrations were carefully reviewed and selected from 84 submissions. The papers are organized in sections on the workshops CMS 2012, EDCM-NoCoDa, MODIC, MORE-BI, RIGIM, SeCoGIS and WISM. The workshops cover different conceptual modeling topics, from requirements, goal and service modeling, to evolution and change management, to non-conventional data access, and they span a wide range of domains including Web information systems, geographical information systems, business intelligence, data-intensive computing.

Advances in Grid and Pervasive Computing - Jukka Riekkö 2011-04-27

This book constitutes the proceedings of the 6th International Conference, GPC 2011, held in Oulu, Finland in May 2011. The 28 revised full papers were carefully revised and selected from 62 submissions and focus on the topics cloud, cluster, and grid computing; peer-to-peer computing; applications and HCI; modeling and verification; service architectures; middleware; and sensor networks.

Business Process Management - Marlon Dumas 2008-10-04

This book constitutes the refereed proceedings of the 6th International Conference on Business Process Management, BPM 2008, held in Milan, Italy, in September 2008. The volume contains 20 revised full research papers and 3 industrial papers carefully reviewed and selected from 154 submissions, as well as 8 prototype demonstration papers selected out of 15 demo submissions. In addition three invited keynote papers are presented. The conference has a record of attracting innovative research of the highest quality related to all aspects of BPM, including theory, frameworks, methods, techniques, architectures, standards, and empirical findings.

Advances in Communication and Networking - Laurence Tianruo Yang
2009-11-02

As computational science and engineering (CSE) become specialized and fragmented, it is easy to lose sight that many topics in CSE have common

threads and because of this, advances in one sub-discipline may transmit to another. The presentation of - sults between different sub-disciplines of CSE encourages this interchange for the advancement of CSE as a whole. Of particular interest is the hybrid approach of c- bining ideas from one discipline with those of another to achieve a result that is more significant than the sum of the individual parts. Through this hybrid philosophy, a new or common principle can be discovered which has the propensity to propagate throughout this multifaceted discipline. This volume comprises the selection of extended versions of papers that were p- sented in their shortened form at the 2008 International Conference on Future Gene- tion Communication and Networking (<http://www.sersc.org/FGCN2008/>) and 2009 Advanced Science and Technology (<http://www.sersc.org/AST2009/>). We would like to acknowledge the great effort of all in the FGCN2008 and AST 2009 International Advisory Board and members of the International Program Committee, as well as all the organizations and individuals who supported the idea of publishing these advances in communication and networking, including SERSC (<http://www.sersc.org/>) and Springer. We would like to give special thanks to Rosslin John Robles, Maricel O. Balitanas, Farkhod Alisherov Alisherovich, Feruza Sattarova Yusfovna. These graduate school students of Hannam University attended to the editing process of this volume with great passion.

The Shape of Data in Digital Humanities - Julia Flanders 2018-11-02

Data and its technologies now play a large and growing role in humanities research and teaching. This book addresses the needs of humanities scholars who seek deeper expertise in the area of data modeling and representation. The authors, all experts in digital humanities, offer a clear explanation of key technical principles, a grounded discussion of case studies, and an exploration of important theoretical concerns. The book opens with an orientation, giving the reader a history of data modeling in the humanities and a grounding in

the technical concepts necessary to understand and engage with the second part of the book. The second part of the book is a wide-ranging exploration of topics central for a deeper understanding of data modeling in digital humanities. Chapters cover data modeling standards and the role they play in shaping digital humanities practice, traditional forms of modeling in the humanities and how they have been transformed by digital approaches, ontologies which seek to anchor meaning in digital humanities resources, and how data models inhabit the other analytical tools used in digital humanities research. It concludes with a glossary chapter that explains specific terms and concepts for data modeling in the digital humanities context. This book is a unique and invaluable resource for teaching and practising data modeling in a digital humanities context.

RESTful Web API Patterns and Practices Cookbook - Mike Amundsen
2022-10-17

Many organizations today orchestrate and maintain apps that rely on other people's services. Software designers, developers, and architects in those companies often work to coordinate and maintain apps based on existing microservices, including third-party services that run outside their ecosystem. This cookbook provides proven recipes to help you get those many disparate parts to work together in your network. Author Mike Amundsen provides step-by-step solutions for finding, connecting, and maintaining applications designed and built by people outside the organization. Whether you're working on human-centric mobile apps or creating high-powered machine-to-machine solutions, this guide shows you the rules, routines, commands, and protocols--the glue--that integrates individual microservices so they can function together in a safe, scalable, and reliable way. Design and build individual microservices that can successfully interact on the open web Increase interoperability by designing services that share a common understanding Build client applications that can adapt to evolving services

without breaking Create resilient and reliable microservices that support peer-to-peer interactions on the web Use web-based service registries to support runtime "find-and-bind" operations that manage external dependencies in real time Implement stable workflows to accomplish complex, multiservice tasks consistently

Grid and Cloud Computing: Concepts, Methodologies, Tools and Applications - Management Association, Information Resources 2012-04-30

"This reference presents a vital compendium of research detailing the latest case studies, architectures, frameworks, methodologies, and research on Grid and Cloud Computing"--

Grid Resource Management - Frederic Magoules 2008-09-22

Grid technology offers the potential for providing secure access to remote services, thereby promoting scientific collaborations in an unprecedented scale. Grid Resource Management: Toward Virtual and Services Compliant Grid Computing presents a comprehensive account of the architectural issues of grid technology, such as security, data management, logging, and aggregation of services, as well as related technologies. After covering grid usages, grid systems, and the evolution of grid computing, the book discusses operational issues associated with web services and service-oriented architecture. It also explores technical and business topics relevant to data management, the development and characteristics of P2P systems, and a grid-enabled virtual file system (GRAVY) that integrates underlying heterogeneous file systems into a unified location-transparent file system of the grid. The book covers scheduling algorithms, strategies, problems, and architectures as well as workflow management systems and semantic technologies. In addition, the authors describe how to deploy scientific applications into a grid environment. They also explain grid engineering and grid service programming. Examining both data and execution management in grid computing, this book chronicles the current trend of grid

developments toward a more service-oriented approach that exposes grid protocols using web services standards.

The Practice of Enterprise Modeling - Patrick van Bommel 2010-10-29

This volume constitutes the proceedings of the Third IFIP WG 8.1 Working Conference on the Practice of Enterprise Modeling, held in Delft, The Netherlands, during November 9-10, 2010. The goal of the conference is both to foster a better understanding of the practice of enterprise modeling and to improve its theoretical foundations. The 17 papers presented were carefully reviewed and selected from 44 submissions. They reflect the trend for both practitioners and academics to look into domains and conceptualizations addressing dedicated business-oriented topics like business intelligence or domain-driven process families, and thus reach beyond traditional information systems engineering.

Risks and Resilience of Collaborative Networks - Luis M. Camarinha-Matos 2015-10-02

This book constitutes the refereed proceedings of the 16th IFIP WG 5.5 Working Conference on Virtual Enterprises, PRO-VE 2015, held in Albi, France, in October 2015. The 61 revised papers were carefully selected from 126 submissions. They provide a comprehensive overview of identified challenges and recent advances in various collaborative network (CN) domains and their applications, with a strong focus on the following areas: risks in collaborative networks; agility and resilience in collaborative networks; collaboration frameworks; logistics and transportation; innovation networks; governance in collaborative networks; collaborative communities; information and assets sharing; business processes; performance and optimization; and network formation.

Business Enterprise, Process, and Technology Management: Models and Applications - Shankararaman, Venky 2012-03-31

"This book generates a comprehensive overview of the recent advances in

concepts, technologies, and applications that enable advanced business process management in various enterprises"--Provided by publisher.

Web Semantics - Sarika Jain 2021-03-27

Web Semantics strengthen the description of web resources to exploit them better and make them more meaningful for both humans and machines, thereby contributing to the development of a knowledgeintensive data web. The world is experiencing the movement of concept from data to knowledge and the movement of web from document model to data model. The underlying idea is making the data machine understandable and processable. In the light of these trends, conciliation of Semantic and the Web is of paramount importance for further progress in the area. **Web Semantics: Cutting Edge and Future Directions in Healthcare** describes the three major components of the study of Semantic Web, namely Representation, Reasoning, and Security with a special focus on the healthcare domain. This book summarizes the trends and current research advances in web semantics, emphasizing the existing tools and techniques, methodologies, and research solutions. It provides easily comprehensible information on Web Semantics including semantics for data and semantics for services. Presents a comprehensive examination of the emerging research in areas of the semantic web, including ontological engineering, semantic annotation, reasoning and intelligent processing, semantic search paradigms, semantic web mining, and semantic sentiment analysis Helps readers understand key concepts in semantic web applications for biomedical engineering and healthcare, including mapping disparate knowledge bases, security issues, multilingual semantic web, and integrating databases with knowledge bases Includes coverage of key application areas of the semantic web, including clinical decision-making, biodiversity science, interactive healthcare, intelligent agent systems, decision support systems, and clinical natural language processing

Digital Humanities Pedagogy - Brett D. Hirsch 2012

"The essays in this collection offer a timely intervention in digital humanities scholarship, bringing together established and emerging scholars from a variety of humanities disciplines across the world. The first section offers views on the practical realities of teaching digital humanities at undergraduate and graduate levels, presenting case studies and snapshots of the authors' experiences alongside models for future courses and reflections on pedagogical successes and failures. The next section proposes strategies for teaching foundational digital humanities methods across a variety of scholarly disciplines, and the book concludes with wider debates about the place of digital humanities in the academy, from the field's cultural assumptions and social obligations to its political visions." (4e de couverture).

Web Technologies and Applications - Quan Z. Sheng 2012-04-05

This book constitutes the refereed proceedings of the 14th Asia-Pacific Conference APWeb 2012 held in Kunming, China, in April 2012. The 39 full papers presented together with 34 short papers, 2 keynote talks, and 5 demo papers were carefully reviewed and selected from 167 initial submissions. The papers cover contemporary topics in the fields of Web management and World Wide Web related research and applications, such as advanced application of databases, cloud computing, content management, data mining and knowledge discovery, distributed and parallel processing, grid computing, internet of things, semantic Web and Web ontology, security, privacy and trust, sensor networks, service-oriented computing, Web community analysis, Web mining and social networks.

Grid Computing for Bioinformatics and Computational Biology - El-Ghazali Talbi 2007-12-04

The only single, up-to-date source for Grid issues in bioinformatics and biology Bioinformatics is fast emerging as an important discipline for academic research and industrial applications, creating a need for the use of Grid computing techniques for large-scale distributed applications. This book

successfully presents Grid algorithms and their real-world applications, provides details on modern and ongoing research, and explores software frameworks that integrate bioinformatics and computational biology. Additional coverage includes: * Bio-ontology and data mining * Data visualization * DNA assembly, clustering, and mapping * Molecular evolution and phylogeny * Gene expression and micro-arrays * Molecular modeling and simulation * Sequence search and alignment * Protein structure prediction * Grid infrastructure, middleware, and tools for bio data Grid Computing for Bioinformatics and Computational Biology is an indispensable resource for professionals in several research and development communities including bioinformatics, computational biology, Grid computing, data mining, and more. It also serves as an ideal textbook for undergraduate- and graduate-level courses in bioinformatics and Grid computing.

A Cell Biologist's Guide to Modeling and Bioinformatics - Raquell M. Holmes
2008-02-13

A step-by-step guide to using computational tools to solve problems in cell biology Combining expert discussion with examples that can be reproduced by the reader, A Cell Biologist's Guide to Modeling and Bioinformatics introduces an array of informatics tools that are available for analyzing biological data and modeling cellular processes. You learn to fully leverage public databases and create your own computational models. All that you need is a working knowledge of algebra and cellular biology; the author provides all the other tools you need to understand the necessary statistical and mathematical methods. Coverage is divided into two main categories: Molecular sequence database chapters are dedicated to gaining an understanding of tools and strategies—including queries, alignment methods, and statistical significance measures—needed to improve searches for sequence similarity, protein families, and putative functional domains. Discussions of sequence alignments and biological database searching focus on publicly

available resources used for background research and the characterization of novel gene products. Modeling chapters take you through all the steps involved in creating a computational model for such basic research areas as cell cycle, calcium dynamics, and glycolysis. Each chapter introduces a new simulation tool and is based on published research. The combination creates a rich context for ongoing skill and knowledge development in modeling biological research systems. Students and professional cell biologists can develop the basic skills needed to learn computational cell biology. This unique text, with its step-by-step instruction, enables you to test and develop your new bioinformatics and modeling skills. References are provided to help you take advantage of more advanced techniques, technologies, and training. **Collaborative Networks for a Sustainable World** - Luis M. Camarinha-Matos
2010-09-21

Collaborative Networks for a Sustainable World Aiming to reach a sustainable world calls for a wider collaboration among multiple stakeholders from different origins, as the changes needed for sustainability exceed the capacity and capability of any individual actor. In recent years there has been a growing awareness both in the political sphere and in civil society including the business sectors, on the importance of sustainability. Therefore, this is an important and timely research issue, not only in terms of systems design but also as an effort to borrow and integrate contributions from different disciplines when designing and/or governing those systems. The discipline of collaborative networks especially, which has already emerged in many application sectors, shall play a key role in the implementation of effective sustainability strategies. PRO-VE 2010 focused on sharing knowledge and experiences as well as identifying directions for further research and development in this area. The conference - dressed models, infrastructures, support tools, and governance principles developed for collaborative networks, as important resources to support multi-stakeholder sustainable developments.

Furthermore, the challenges of this theme open new research directions for CNs. PRO-VE 2010 held in St.

Optimization of Manufacturing Systems Using the Internet of Things - Yingfeng Zhang 2016-10-21

Optimization of Manufacturing Systems Using the Internet of Things extends the IoT (Internet of Things) into the manufacturing field to develop an IoMT (Internet of Manufacturing Things) architecture with real-time traceability, visibility, and interoperability in production planning, execution, and control. This book is essential reading for anyone interested in the optimization and control of an intelligent manufacturing system. As modern manufacturing shop-floors can create bottlenecks in the capturing and collection of real-time field information, and because paper-based manual systems are time-consuming and prone to errors, this book helps readers understand how to alleviate these issues, assisting them in their decision-making on shop-floors.. Includes case studies in implementing IoTs for data acquisition, monitoring, and assembly in manufacturing. Helps manufacturers to tackle the growing complexities and uncertainties of manufacturing systems in globalized business environments Acts as an introduction to using IoT for readers across industrial and manufacturing engineering

System Architecture with XML - Berthold Daum 2003

Scenario -- Groundwork -- Structure -- Meaning -- Modeling processes -- Communication -- Navigation and discovery -- Presentation formats -- Infrastructure -- Solutions.

Technology Supporting Business Solutions - Rafael Corchuelo 2003

The explosive growth of the Internet and the web have created an ever-growing demand for web-based information systems, and ever-growing challenges for Information Systems Engineering. Some of them include the emerging web services technology, database technologies and application integration, as well as data analysis and knowledge discovery. This book is a

showcase of recent, significant advances in web-based information systems as well as data integration and analysis. It provides an overview of various technologies used for building innovative information systems applied to real business solutions. It includes eight chapters that are divided into five parts, namely: web services, database technologies, data and application integration, data analysis and knowledge discovery, and recommended bibliography. The material presented in these chapters will help the reader have an overall idea of the research that is being carried out in universities and companies to develop today's innovative business solutions. Contents: Preface; Web Services; Web Services Technologies for Outsourcing; Conceptual Modelling with Dynamic Object Roles; Temporal Versioning in Data Warehouse; Missing Inform

Rapid Integration of Software Engineering Techniques - Nicolas Guelfi 2006-05-18

This book constitutes the thoroughly refereed post-proceedings of the Second International Workshop on Rapid Integration of Software Engineering Techniques, RISE 2005. The book presents 19 revised full papers together with the abstract of a keynote paper. Among the topics addressed are modelling safety case evolution, practical approaches in model mapping, context-aware service composition, techniques for representing product line core assets for automation, formal development of reactive fault-tolerant systems, and more.

Computable Models of the Law - Pompeu Casanovas 2008-10-14

Information technology has now pervaded the legal sector, and the very modern concepts of e-law and e-justice show that automation processes are ubiquitous. European policies on transparency and information society, in particular, require the use of technology and its steady improvement. Some of the revised papers presented in this book originate from a workshop held at the European University Institute of Florence, Italy, in December 2006. The

workshop was devoted to the discussion of the different ways of understanding and explaining contemporary law, for the purpose of building computable models of it -- especially models enabling the development of computer applications for the legal domain. During the course of the following year, several new contributions, provided by a number of ongoing (or recently finished) European projects on computation and law, were received, discussed and reviewed to complete the survey. This book presents 20 thoroughly refereed revised papers on the hot topics under research in different EU projects: legislative XML, legal ontologies, semantic web, search and meta-search engines, web services, system architecture, dialectic systems, dialogue games, multi-agent systems (MAS), legal argumentation, legal reasoning, e-justice, and online dispute resolution. The papers are organized in topical sections on knowledge representation, ontologies and XML legislative drafting; knowledge representation, legal ontologies and information retrieval; argumentation and legal reasoning; normative and multi-agent systems; and online dispute resolution.

Sun Tracking and Solar Renewable Energy Harvesting - Gerro Prinsloo

2015-11-02

Free to download eBook on Practical Solar Tracking Design, Solar Tracking, Sun Tracking, Sun Tracker, Solar Tracker, Follow Sun, Sun Position calculation (Azimuth, Elevation, Zenith), Sun following, Sunrise, Sunset, Moon-phase, Moonrise, Moonset calculators. In harnessing power from the sun through a solar tracker or solar tracking system, renewable energy system developers require automatic solar tracking software and solar position algorithms. On-axis sun tracking system such as the altitude-azimuth dual axis or multi-axis solar tracker systems use a sun tracking algorithm or ray tracing sensors or software to ensure the sun's passage through the sky is traced with high precision in automated solar tracker applications, right through summer solstice, solar equinox and winter solstice. Eco Friendly and Environmentally

Sustainable Micro Combined Solar Heat and Power (m-CHP, m-CCHP, m-CHCP) with Microgrid Storage and Layered Smartgrid Control towards Supplying Off-Grid Rural Villages in developing BRICS countries such as Africa, India, China and Brazil. Off-grid rural villages and isolated islands areas require mCHP and trigeneration solar power plants and associated isolated smart microgrid solutions to serve the community energy needs. This article describes the development progress for such a system, also referred to as solar polygeneration. The system includes a sun tracker mechanism wherein a parabolic dish or lenses are guided by a light sensitive mechanism in a way that the solar receiver is always at right angle to the solar radiation. Solar thermal energy is then either converted into electrical energy through a free piston Stirling, or stored in a thermal storage container. The project includes the thermodynamic modeling of the plant in Matlab Simulink as well as the development of an intelligent control approach that includes smart microgrid distribution and optimization. The book includes aspects in the simulation and optimization of stand-alone hybrid renewable energy systems and co-generation in isolated or islanded microgrids. It focusses on the stepwise development of a hybrid solar driven micro combined cooling heating and power (mCCHP) compact trigeneration polygeneration and thermal energy storage (TES) system with intelligent weather prediction, weak-ahead scheduling (time horizon), and look-ahead dispatch on integrated smart microgrid distribution principles. The solar harvesting and solar thermodynamic system includes an automatic sun tracking platform based on a PLC controlled mechatronic sun tracking system that follows the sun progressing across the sky. An intelligent energy management and adaptive learning control optimization approach is proposed for autonomous off-grid remote power applications, both for thermodynamic optimization and smart micro-grid optimization for distributed energy resources (DER). The correct resolution of this load-following multi objective optimization problem is a

complex task because of the high number and multi-dimensional variables, the cross-correlation and interdependency between the energy streams as well as the non-linearity in the performance of some of the system components. Exergy-based control approaches for smartgrid topologies are considered in terms of the intelligence behind the safe and reliable operation of a microgrid in an automated system that can manage energy flow in electrical as well as thermal energy systems. The standalone micro-grid solution would be suitable for a rural village, intelligent building, district energy system, campus power, shopping mall centre, isolated network, eco estate or remote island application setting where self-generation and decentralized energy system concepts play a role. Discrete digital simulation models for the thermodynamic and active demand side management systems with digital smartgrid control unit to optimize the system energy management is currently under development. Parametric simulation models for this trigeneration system (polygeneration, poligeneration, quadgeneration) are developed on the Matlab Simulink and TrnSys platforms. In terms of model predictive coding strategies, the automation controller will perform multi-objective cost optimization for energy management on a microgrid level by managing the generation and storage of electrical, heat and cooling energies in layers. Each layer has its own set of smart microgrid priorities associated with user demand side cycle predictions. Mixed Integer Linear Programming and Neural network algorithms are being modeled to perform Multi Objective Control optimization as potential optimization and adaptive learning techniques.

Automatic Solar Tracking Sun Tracking Satellite Tracking rastreador solar seguimiento solar seguidor solar automático de seguimiento solar - Gerro Prinsloo 2015-11-01

Automatic Solar Tracking Sun Tracking : This book details Automatic Solar-Tracking, Sun-Tracking-Systems, Solar-Trackers and Sun Tracker Systems.

An intelligent automatic solar tracker is a device that orients a payload toward the sun. Such programmable computer based solar tracking device includes principles of solar tracking, solar tracking systems, as well as microcontroller, microprocessor and/or PC based solar tracking control to orientate solar reflectors, solar lenses, photovoltaic panels or other optical configurations towards the sun. Motorized space frames and kinematic systems ensure motion dynamics and employ drive technology and gearing principles to steer optical configurations such as mangin, parabolic, conic, or cassegrain solar energy collectors to face the sun and follow the sun movement contour continuously (seguimiento solar y automatización, automatización seguidor solar, tracking solar e automação, automação seguidor solar, inseguimento solare, inseguitore solare, energia termica, sole seguito, posizionatore motorizzato) In harnessing power from the sun through a solar tracker or practical solar tracking system, renewable energy control automation systems require automatic solar tracking software and solar position algorithms to accomplish dynamic motion control with control automation architecture, circuit boards and hardware. On-axis sun tracking system such as the altitude-azimuth dual axis or multi-axis solar tracker systems use a sun tracking algorithm or ray tracing sensors or software to ensure the sun's passage through the sky is traced with high precision in automated solar tracker applications, right through summer solstice, solar equinox and winter solstice. A high precision sun position calculator or sun position algorithm is this an important step in the design and construction of an automatic solar tracking system. The content of the book is also applicable to communication antenna satellite tracking and moon tracking algorithm source code for which links to free download links are provided. From sun tracing software perspective, the sonnet Tracing The Sun has a literal meaning. Within the context of sun track and trace, this book explains that the sun's daily path across the sky is directed by relatively simple principles, and if grasped/understood, then it is relatively

easy to trace the sun with sun following software. Sun position computer software for tracing the sun are available as open source code, sources that is listed in this book. The book also describes the use of satellite tracking software and mechanisms in solar tracking applications. Ironically there was even a system called sun chaser, said to have been a solar positioner system known for chasing the sun throughout the day. Using solar equations in an electronic circuit for automatic solar tracking is quite simple, even if you are a novice, but mathematical solar equations are over complicated by academic experts and professors in text-books, journal articles and internet websites. In terms of solar hobbies, scholars, students and Hobbyist's looking at solar tracking electronics or PC programs for solar tracking are usually overcome by the sheer volume of scientific material and internet resources, which leaves many developers in frustration when search for simple experimental solar tracking source-code for their on-axis sun-tracking systems. This booklet will simplify the search for the mystical sun tracking formulas for your sun tracker innovation and help you develop your own autonomous solar tracking controller. By directing the solar collector directly into the sun, a solar harvesting means or device can harness sunlight or thermal heat. This is achieved with the help of sun angle formulas, solar angle formulas or solar tracking procedures for the calculation of sun's position in the sky. Automatic sun tracking system software includes algorithms for solar altitude azimuth angle calculations required in following the sun across the sky. In using the longitude, latitude GPS coordinates of the solar tracker location, these sun tracking software tools supports precision solar tracking by determining the solar altitude-azimuth coordinates for the sun trajectory in altitude-azimuth tracking at the tracker location, using certain sun angle formulas in sun vector calculations. Instead of follow the sun software, a sun tracking sensor such as a sun sensor or webcam or video camera with vision based sun following image processing software can also be used to determine the position of the sun

optically. Such optical feedback devices are often used in solar panel tracking systems and dish tracking systems. Dynamic sun tracing is also used in solar surveying, DNI analyser and sun surveying systems that build solar infographics maps with solar radiance, irradiance and DNI models for GIS (geographical information system). In this way geospatial methods on solar/environment interaction makes use use of geospatial technologies (GIS, Remote Sensing, and Cartography). Climatic data and weather station or weather center data, as well as queries from sky servers and solar resource database systems (i.e. on DB2, Sybase, Oracle, SQL, MySQL) may also be associated with solar GIS maps. In such solar resource modelling systems, a pyranometer or solarimeter is normally used in addition to measure direct and indirect, scattered, dispersed, reflective radiation for a particular geographical location. Sunlight analysis is important in flash photography where photographic lighting are important for photographers. GIS systems are used by architects who add sun shadow applets to study architectural shading or sun shadow analysis, solar flux calculations, optical modelling or to perform weather modelling. Such systems often employ a computer operated telescope type mechanism with ray tracing program software as a solar navigator or sun tracer that determines the solar position and intensity. The purpose of this booklet is to assist developers to track and trace suitable source-code and solar tracking algorithms for their application, whether a hobbyist, scientist, technician or engineer. Many open-source sun following and tracking algorithms and source-code for solar tracking programs and modules are freely available to download on the internet today. Certain proprietary solar tracker kits and solar tracking controllers include a software development kit SDK for its application programming interface API attributes (Pebble). Widget libraries, widget toolkits, GUI toolkit and UX libraries with graphical control elements are also available to construct the graphical user interface (GUI) for your solar tracking or solar power monitoring program. The solar library used

by solar position calculators, solar simulation software and solar contour calculators include machine program code for the solar hardware controller which are software programmed into Micro-controllers, Programmable Logic Controllers PLC, programmable gate arrays, Arduino processor or PIC processor. PC based solar tracking is also high in demand using C++, Visual Basic VB, as well as MS Windows, Linux and Apple Mac based operating systems for sun path tables on Matlab, Excel. Some books and internet webpages use other terms, such as: sun angle calculator, sun position calculator or solar angle calculator. As said, such software code calculate the solar azimuth angle, solar altitude angle, solar elevation angle or the solar Zenith angle (Zenith solar angle is simply referenced from vertical plane, the mirror of the elevation angle measured from the horizontal or ground plane level). Similar software code is also used in solar calculator apps or the solar power calculator apps for IOS and Android smartphone devices. Most of these smartphone solar mobile apps show the sun path and sun-angles for any location and date over a 24 hour period. Some smartphones include augmented reality features in which you can physically see and look at the solar path through your cell phone camera or mobile phone camera at your phone's specific GPS location. In the computer programming and digital signal processing (DSP) environment, (free/open source) program code are available for VB, .Net, Delphi, Python, C, C+, C++, PHP, Swift, ADM, F, Flash, Basic, QBasic, GBasic, KBasic, SIMPL language, Squirrel, Solaris, Assembly language on operating systems such as MS Windows, Apple Mac, DOS or Linux OS. Software algorithms predicting position of the sun in the sky are commonly available as graphical programming platforms such as Matlab (Mathworks), Simulink models, Java applets, TRNSYS simulations, Scada system apps, Labview module, Beckhoff TwinCAT (Visual Studio), Siemens SPA, mobile and iphone apps, Android or iOS tablet apps, and so forth. At the same time, PLC software code for a range of sun tracking automation technology can follow the profile

of sun in sky for Siemens, HP, Panasonic, ABB, Allan Bradley, OMRON, SEW, Festo, Beckhoff, Rockwell, Schneider, Endress Hauser, Fudji electric. Honeywell, Fuchs, Yokonawa, or Muthibishi platforms. Sun path projection software are also available for a range of modular IPC embedded PC motherboards, Industrial PC, PLC (Programmable Logic Controller) and PAC (Programmable Automation Controller) such as the Siemens S7-1200 or Siemens Logo, Beckhoff IPC or CX series, OMRON PLC, Ercam PLC, AC500plc ABB, National Instruments NI PXI or NI cRIO, PIC processor, Intel 8051/8085, IBM (Cell, Power, Brain or Truenorth series), FPGA (Xilinx Altera Nios), Intel, Xeon, Atmel megaAVR, MPU, Maple, Teensy, MSP, XMOS, Xbee, ARM, Raspberry Pi, Eagle, Arduino or Arduino AtMega microcontroller, with servo motor, stepper motor, direct current DC pulse width modulation PWM (current driver) or alternating current AC SPS or IPC variable frequency drives VFD motor drives (also termed adjustable-frequency drive, variable-speed drive, AC drive, micro drive or inverter drive) for electrical, mechatronic, pneumatic, or hydraulic solar tracking actuators. The above motion control and robot control systems include analogue or digital interfacing ports on the processors to allow for tracker angle orientation feedback control through one or a combination of angle sensor or angle encoder, shaft encoder, precision encoder, optical encoder, magnetic encoder, direction encoder, rotational encoder, chip encoder, tilt sensor, inclination sensor, or pitch sensor. Note that the tracker's elevation or zenith axis angle may measured using an altitude angle-, declination angle-, inclination angle-, pitch angle-, or vertical angle-, zenith angle- sensor or inclinometer. Similarly the tracker's azimuth axis angle be measured with a azimuth angle-, horizontal angle-, or roll angle- sensor. Chip integrated accelerometer magnetometer gyroscope type angle sensors can also be used to calculate displacement. Other options include the use of thermal imaging systems such as a Fluke thermal imager, or robotic or vision based solar

tracker systems that employ face tracking, head tracking, hand tracking, eye tracking and car tracking principles in solar tracking. With unattended decentralised rural, island, isolated, or autonomous off-grid power installations, remote control, monitoring, data acquisition, digital datalogging and online measurement and verification equipment becomes crucial. It assists the operator with supervisory control to monitor the efficiency of remote renewable energy resources and systems and provide valuable web-based feedback in terms of CO₂ and clean development mechanism (CDM) reporting. A power quality analyser for diagnostics through internet, WiFi and cellular mobile links is most valuable in frontline troubleshooting and predictive maintenance, where quick diagnostic analysis is required to detect and prevent power quality issues. Solar tracker applications cover a wide spectrum of solar applications and solar assisted application, including concentrated solar power generation, solar desalination, solar water purification, solar steam generation, solar electricity generation, solar industrial process heat, solar thermal heat storage, solar food dryers, solar water pumping, hydrogen production from methane or producing hydrogen and oxygen from water (HHO) through electrolysis. Many patented or non-patented solar apparatus include tracking in solar apparatus for solar electric generator, solar desalinator, solar steam engine, solar ice maker, solar water purifier, solar cooling, solar refrigeration, USB solar charger, solar phone charging, portable solar charging tracker, solar coffee brewing, solar cooking or solar drying means. Your project may be the next breakthrough or patent, but your invention is held back by frustration in search for the sun tracker you require for your solar powered appliance, solar generator, solar tracker robot, solar freezer, solar cooker, solar drier, solar pump, solar freezer, or solar dryer project. Whether your solar electronic circuit diagram include a simplified solar controller design in a solar electricity project, solar power kit, solar hobby kit, solar steam generator, solar hot water system, solar ice maker,

solar desalinator, hobbyist solar panels, hobby robot, or if you are developing professional or hobby electronics for a solar utility or micro scale solar powerplant for your own solar farm or solar farming, this publication may help accelerate the development of your solar tracking innovation. Lately, solar polygeneration, solar trigeneration (solar triple generation), and solar quad generation (adding delivery of steam, liquid/gaseous fuel, or capture food-grade CO₂) systems have need for automatic solar tracking. These systems are known for significant efficiency increases in energy yield as a result of the integration and re-use of waste or residual heat and are suitable for compact packaged micro solar powerplants that could be manufactured and transported in kit-form and operate on a plug-and play basis. Typical hybrid solar power systems include compact or packaged solar micro combined heat and power (CHP or mCHP) or solar micro combined, cooling, heating and power (CCHP, CHPC, mCCHP, or mCHPC) systems used in distributed power generation. These systems are often combined in concentrated solar CSP and CPV smart microgrid configurations for off-grid rural, island or isolated microgrid, minigrid and distributed power renewable energy systems. Solar tracking algorithms are also used in modelling of trigeneration systems using Matlab Simulink (Modelica or TRNSYS) platform as well as in automation and control of renewable energy systems through intelligent parsing, multi-objective, adaptive learning control and control optimization strategies. Solar tracking algorithms also find application in developing solar models for country or location specific solar studies, for example in terms of measuring or analysis of the fluctuations of the solar radiation (i.e. direct and diffuse radiation) in a particular area. Solar DNI, solar irradiance and atmospheric information and models can thus be integrated into a solar map, solar atlas or geographical information systems (GIS). Such models allows for defining local parameters for specific regions that may be valuable in terms of the evaluation of different solar in photovoltaic or CSP systems on simulation and synthesis

platforms such as Matlab and Simulink or in linear or multi-objective optimization algorithm platforms such as COMPOSE, EnergyPLAN or DER-CAM. A dual-axis solar tracker and single-axis solar tracker may use a sun tracker program or sun tracker algorithm to position a solar dish, solar panel array, heliostat array, PV panel, solar antenna or infrared solar nantenna. A self-tracking solar concentrator performs automatic solar tracking by computing the solar vector. Solar position algorithms (TwinCAT, SPA, or PSA Algorithms) use an astronomical algorithm to calculate the position of the sun. It uses astronomical software algorithms and equations for solar tracking in the calculation of sun's position in the sky for each location on the earth at any time of day. Like an optical solar telescope, the solar position algorithm pin-points the solar reflector at the sun and locks onto the sun's position to track the sun across the sky as the sun progresses throughout the day. Optical sensors such as photodiodes, light-dependant-resistors (LDR) or photoresistors are used as optical accuracy feedback devices. Lately we also included a section in the book (with links to microprocessor code) on how the PixArt Wii infrared camera in the Wii remote or Wiimote may be used in infrared solar tracking applications. In order to harvest free energy from the sun, some automatic solar positioning systems use an optical means to direct the solar tracking device. These solar tracking strategies use optical tracking techniques, such as a sun sensor means, to direct sun rays onto a silicon or CMOS substrate to determine the X and Y coordinates of the sun's position. In a solar mems sun-sensor device, incident sunlight enters the sun sensor through a small pin-hole in a mask plate where light is exposed to a silicon substrate. In a web-camera or camera image processing sun tracking and sun following means, object tracking software performs multi object tracking or moving object tracking methods. In an solar object tracking technique, image processing software performs mathematical processing to box the outline of the apparent solar disc or sun blob within the captured image frame, while

sun-localization is performed with an edge detection algorithm to determine the solar vector coordinates. An automated positioning system help maximize the yields of solar power plants through solar tracking control to harness sun's energy. In such renewable energy systems, the solar panel positioning system uses a sun tracking techniques and a solar angle calculator in positioning PV panels in photovoltaic systems and concentrated photovoltaic CPV systems. Automatic on-axis solar tracking in a PV solar tracking system can be dual-axis sun tracking or single-axis sun solar tracking. It is known that a motorized positioning system in a photovoltaic panel tracker increase energy yield and ensures increased power output, even in a single axis solar tracking configuration. Other applications such as robotic solar tracker or robotic solar tracking system uses robotica with artificial intelligence in the control optimization of energy yield in solar harvesting through a robotic tracking system. Automatic positioning systems in solar tracking designs are also used in other free energy generators, such as concentrated solar thermal power CSP and dish Stirling systems. The sun tracking device in a solar collector in a solar concentrator or solar collector Such a performs on-axis solar tracking, a dual axis solar tracker assists to harness energy from the sun through an optical solar collector, which can be a parabolic mirror, parabolic reflector, Fresnel lens or mirror array/matrix. A parabolic dish or reflector is dynamically steered using a transmission system or solar tracking slew drive mean. In steering the dish to face the sun, the power dish actuator and actuation means in a parabolic dish system optically focusses the sun's energy on the focal point of a parabolic dish or solar concentrating means. A Stirling engine, solar heat pipe, thermosyphin, solar phase change material PCM receiver, or a fibre optic sunlight receiver means is located at the focal point of the solar concentrator. The dish Stirling engine configuration is referred to as a dish Stirling system or Stirling power generation system. Hybrid solar power systems (used in combination with biogas, biofuel, petrol, ethanol,

diesel, natural gas or PNG) use a combination of power sources to harness and store solar energy in a storage medium. Any multitude of energy sources can be combined through the use of controllers and the energy stored in batteries, phase change material, thermal heat storage, and in cogeneration form converted to the required power using thermodynamic cycles (organic Rankin, Brayton cycle, micro turbine, Stirling) with an inverter and charge controller.

Universal Meta Data Models - David Marco 2004-03-25

The heart of the book provides the complete set of models that will support most of an organization's core business functions, including universal meta models for enterprise-wide systems, business meta data and data stewardship, portfolio management, business rules, and XML, messaging, and transactions. Developers can directly adapt these models to their own businesses, saving countless hours of development time. Building effective meta data repositories is complicated and time-consuming, and few IT departments have the necessary expertise to do it right - which is why this book is sure to find a ready audience. Begins with a quick overview of the Meta Data Repository Environment and the business uses of meta data, then goes on to describe the technical architecture followed by the detailed models.

On the Move to Meaningful Internet Systems: OTM 2009 - Tharam Dillon 2009-10-26

This two-volume set LNCS 5870/5871 constitutes the refereed proceedings of the four confederated international conferences on Cooperative Information Systems (CoopIS 2009), Distributed Objects and Applications (DOA 2009), Information Security (IS 2009), and Ontologies, Databases and Applications of Semantics (ODBASE 2009), held as OTM 2009 in Vilamoura, Portugal, in November 2009. The 83 revised full papers presented together with 4 keynote talks were carefully reviewed and selected from a total of 234 submissions. Corresponding to the four OTM 2009 main conferences CoopIS,

DOA, IS, and ODBASE the papers are organized in topical sections on workflow; process models; ontology challenges; network complexity; modeling cooperation; information complexity; infrastructure; information; aspect-oriented approaches for distributed middleware; distributed algorithms and communication protocols; distributed infrastructures for cluster and Grid computing; object-based, component-based, resource-oriented, event-oriented, and service-oriented middleware; peer-to-peer and centralized infrastructures; performance analysis of distributed computing systems; reliability, fault tolerance, quality of service, and real time support; self* properties in distributed middleware; software engineering for distributed middleware systems; security and privacy in a connected world; ubiquitous and pervasive computing; information systems security; privacy and authentication; security policies and verification; managing ontologies; using ontologies; event processing; dealing with heterogeneity; building knowledge bases; and XML and XML schema.

Advanced Information Systems Engineering - Klaus R. Dittrich 2003-05-15

Since the late 1980s, the CAiSE conferences have provided a forum for the presentation and exchange of research results and practical experiences within the field of Information Systems Engineering. CAiSE 2001 was the 13th conference in this series and was held from 4th to 8th June 2001 in the resort of Interlaken located near the three famous Swiss mountains - the Eiger, Mönch, and Jungfrau. The first two days consisted of pre-conference workshops and tutorials. The workshop themes included requirements engineering, evaluation of modeling methods, data integration over the Web, agent-oriented information systems, and the design and management of data warehouses. Continuing the tradition of recent CAiSE conferences, there was also a doctoral consortium. The pre-conference tutorials were on the themes of e-business models and XML application development. The main conference program included three invited speakers, two tutorials, and a panel discussion

in addition to presentations of the papers in these proceedings. We also included a special ‘practice and experience’ session to give presenters an opportunity to report on and discuss experiences and investigations on the use of methods and technologies in practice.

We extend our thanks to the members of the program committee and all other referees without whom such conferences would not be possible. The program committee, whose members came from 20 different countries, selected 27 high-quality research papers and 3 experience reports from a total of 97 submissions. The topics of these papers span the wide-range of topics relevant to information systems engineering – from requirements and design through to implementation and operation of complex and dynamic systems.

High Performance Computing - Heike Jagode 2021-11-12

This book constitutes the refereed post-conference proceedings of 9 workshops held at the 35th International ISC High Performance 2021 Conference, in Frankfurt, Germany, in June-July 2021: Second International Workshop on the Application of Machine Learning Techniques to Computational Fluid Dynamics and Solid Mechanics Simulations and Analysis; HPC-IODC: HPC I/O in the Data Center Workshop; Compiler-assisted Correctness Checking and Performance Optimization for HPC; Machine Learning on HPC Systems; 4th International Workshop on Interoperability of Supercomputing and Cloud Technologies; 2nd International Workshop on Monitoring and Operational Data Analytics; 16th Workshop on Virtualization in High-Performance Cloud Computing; Deep Learning on Supercomputers; 5th International Workshop on In Situ Visualization. The 35 papers included in this volume were carefully reviewed and selected. They cover all aspects of research, development, and application of large-scale, high performance experimental and commercial systems. Topics include high-performance computing (HPC),

computer architecture and hardware, programming models, system software, performance analysis and modeling, compiler analysis and optimization techniques, software sustainability, scientific applications, deep learning.

Advances in Machine Learning and Data Science - Damodar Reddy Edla 2018-05-16

The Volume of “Advances in Machine Learning and Data Science - Recent Achievements and Research Directives” constitutes the proceedings of First International Conference on Latest Advances in Machine Learning and Data Science (LAMDA 2017). The 37 regular papers presented in this volume were carefully reviewed and selected from 123 submissions. These days we find many computer programs that exhibit various useful learning methods and commercial applications. Goal of machine learning is to develop computer programs that can learn from experience. Machine learning involves knowledge from various disciplines like, statistics, information theory, artificial intelligence, computational complexity, cognitive science and biology. For problems like handwriting recognition, algorithms that are based on machine learning out perform all other approaches. Both machine learning and data science are interrelated. Data science is an umbrella term to be used for techniques that clean data and extract useful information from data. In field of data science, machine learning algorithms are used frequently to identify valuable knowledge from commercial databases containing records of different industries, financial transactions, medical records, etc. The main objective of this book is to provide an overview on latest advancements in the field of machine learning and data science, with solutions to problems in field of image, video, data and graph processing, pattern recognition, data structuring, data clustering, pattern mining, association rule based approaches, feature extraction techniques, neural networks, bio inspired learning and various machine learning algorithms.