OMB No. 6581030735796

Les Capteurs Pour Arduino Et Raspberry Pi Tutoriels Et Projets Tutoriels Et Projets Hors Collection

Carte arduino, les capteurs et actionneurs Kit de 37 capteurs pour Arduino | HD Français La carte arduino, les capteurs et actionneurs Arduino et ses cartes 37 capteurs pour Arduino pour une dizaine d'euros avec ça on peut tout faire ARDUINO #15 : Capteur à ultrasons [tuto en français] KIT DE 37 MODULES ET CAPTEUR POUR ARDUINO ELEGOO(CONCOURS OUVERT) Utilisation de quelques capteurs avec la carte Arduino || capteur de couleur etc 37 in 1 Arduino Sensor KIT Tutoriel 12 : Télécommande universelle Arduino Comment utiliser un capteur de niveau d'eau, écran lcd, buzzer, Arduino ESP32 Car Dashboard/Controller Top 10 Arduino sensors you should know how to use them in 2019 - 2020 Capteur de Vibration piézoélectrique ARDUINO #13 : Module RFID [tuto en français] CAPTEUR DE PRÉSENCE PIR \u0026 ARDUINO la domotique à 2€ 467 Radar Sensors from $3 to over $100: Which one is Best? Parasites sur capteur IR Sharp GP2D120 et cônes sur les capteurs capteur de courant SCT013 arduino et ecran LCD en I2C CAPTEURS | ARDUINO #1: Déballage du kit des capteurs [TUTO] Capteurs de déplacement à courant de Foucault - Principe de mesure et applications Suiveur de ligne et détecteur d'obstacle Arduino. ARDUINO #5 : Capteur de température [tuto en français] Capteur Infrarouge et Arduino, Application [Arduino] Capteurs de secousses, chocs et vibrations. ÉTALONNER LES CAPTEURS D'HUMIDITÉ RELATIVE N'A JAMAIS ÉTÉ AUSSI FACILE Tutoriel | Arduino et capteur de niveau sonore | HD Français

Projets créatifs avec Arduino

TIM 4e / 3e - Cahier d'activités

Automatic Solar Tracking Sun Tracking Satellite Tracking rastreador solar seguimento solar seguidor solar automático de seguimiento solar

High precision solar position algorithms, programs, software and source-code for computing the solar vector, solar coordinates & sun angles in Microprocessor, PLC, Arduino, PIC and PC-based sun tracking devices or dynamic sun following hardware, prático solar rastreo rastreamento, inseguimento del sole, motorizzato inseguimento solare

Défis de l’automatisation des systèmes sociotechniques

Devenez Maker!

Programmation Arduino
50 montages pédagogiques avec Arduino
Géographie de l'environnement
Solar Tracking, Inseguimento Solare, Sol Tracking, Sol de Seguimiento : High precision solar position algorithms, programs, software and source-code for computing the solar vector, solar coordinates & sun angles in Microprocessor, PLC, Arduino, PIC and PC-based sun tracking devices or dynamic sun following hardware
toutes les matières de Seconde - nouveaux programmes du lycée
Des procédés aux matériaux
H2PTM'19
A la découverte du Raspberry Pi
Projets simples et connectés (Bluetooth et Wi-Fi)
Les machines à commande numérique
Programmer avec Arduino en s'amusant pour les nuls
Le numérique à l'ère de l'Internet des objets, de l'hypertexte à l'hyper-objet
Processing
Apprivoisez l'électronique et le codage
Tutoriels et projets

Les Capteurs Pour Arduino Et Raspberry Pi Tutoriels Et Projets Tutoriels Et Projets Hors Collection ***OMB No. 6581030735796 edited by***

ANNA OCONNELL

PROJETS CR□ATIFS AVEC ARDUINO

Armand Colin
La carte électronique Arduino permet de créer des montages ayant un intérêt à la fois : • pour l'élève, afin de découvrir les bases de la programmation, d'utiliser les TICE, d'apprendre par la pratique ; • et pour l'enseignant, qui peut ainsi créer ses propres dispositifs d'acquisition : la carte Arduino est un système peu onéreux, simple d'utilisation et dont les schémas sont publiés sous licence libre. Ce guide vous propose 50 manipulations pédagogiques à réaliser avec Arduino, réparties selon 10 thématiques et débutant par des montages simples (abordables dès la 4e) pour aboutir à des dispositifs plus complexes (niveau post-bac) et utiles au quotidien (arrosage automatique, serre domotique...). Les applications possibles avec la carte Arduino dépassent le cadre de la programmation. Ainsi, certaines expériences présentées permettent d'étudier des phénomènes

physiques autrement et pouvant également être abordés en mathématiques, en biologie-écologie, en agronomie, en agro-équipement, avec les TIM de manière transversale et pluridisciplinaire. Chaque fiche présente les objectifs de la manipulation, le schéma de câblage, la liste du matériel nécessaire, le script, ainsi que des pistes d'applications pédagogiques permettant de contextualiser le montage en fonction de la filière et du niveau d'enseignement. Les points forts • 50 manipulations séquencées en 10 thématiques (capteurs, traitement des données, objets connectés...) • une progression pour aborder les montages les plus simples (dès la 4e) aux plus complexes • la liste du matériel • les schémas de câblage • les scripts • des pistes d'applications pédagogiques En complément, un site compagnon avec : • les schémas en couleur téléchargeables • les scripts en couleur et au format texte téléchargeables • une vidéo présentant une manipulation avec une application Androïd

TIM 4e / 3e - Cahier d'activit□s

ISTE Group

D'abord, on pratique, ensuite on explique ! L'électronique ne se résume pas qu'à des résistances, des condensateurs, des transistors et des diodes. Savez-vous qu'il existe une infinité de projets faisant appel à des comparateurs, des amplis-op ou encore des capteurs ? Après le best-seller L'électronique en pratique de Charles Platt, lisez la suite du même auteur pour vous en convaincre. Grâce à 36 nouvelles expériences, cet ouvrage vous emmènera à la découverte d'une multitude de composants : amplis-op, comparateurs, compteurs, encodeurs, décodeurs, multiplexeurs, registres à décalage, bargraphes, timers, réseaux Darlington, phototransistors... À qui s'adresse ce livre ? Aux électroniciens en herbe, amateurs, bricoleurs, bidouilleurs, geeks, étudiants, musiciens... À tous les makers qui souhaitent approfondir leurs connaissances en électronique. Dans ce livre, vous apprendrez à : mettre au point un testeur de télépathie avec des portes NAND, NOR et XNOR construire un contestataire de bruit avec des amplis-op et des condensateurs de liaison créer une version électronique du YiJing avec un décodeur et un compteur binaire fabriquer un jeu de la fente magique avec un timer, un compteur et un multiplexeur

Automatic Solar Tracking Sun Tracking Satellite Tracking rastreador solar seguimento solar seguidor solar automático de seguimiento solar Createspace Independent Publishing Platform

ARDUINO Achetez la version imprim�e de ce livre et obtenez la version eBook Kindle GRATUITEMENT! Ce livre/cours est pour tout ceux qui ont envie de cr�er d'excitant project avec Arduino. Vous ne devez pas forc�ment connaitre la plateforme Arduino avant de commencer vu que tout les project vous seront expliqu�s au fil et mesure avec des instruction pr�cises. Si vous voulez travaillez avec des capteurs bouclier et l'�lectronique num�rique, ce livre est aussi pour vous. Tout les composant logiciels et materielles dont vous aurez besion seront aussi expliqu�s tout au long du cours. De plus, ce livre vous emm�nera vers le domaine de l'internet des objets. Vous cr�erez un project en utilisant le bouclier Arduino Ethernet la fin de ce livre. Si vous pr�ferez, vous pouvez simplement lire la decription de chaque project, cependant je recommande vraiment de faire les projets soi-m�me afin de comprendre

vraiment la programmation Arduino. Au d&#65533;but de chaque chapitre, vous trouverez la liste de tout les &#65533;l&#65533;ments dont vous aurez besoin pour le projet avec des explications pas a pas. A la fin de chaque chapitre, il y aura des exercices/test dont le but de rendre l'apprentissage facile, rapide et amusant. Ne manquez pas ce nouveau programme "Arduino". Tout ce que vous avez &#65533; faire est de faire d&#65533;filer et de cliquer sur le bouton "Ajouter au panier" pour tout savoir !

High precision solar position algorithms, programs, software and source-code for computing the solar vector, solar coordinates & sun angles in Microprocessor, PLC, Arduino, PIC and PC-based sun tracking devices or dynamic sun following hardware, prático solar rastreo rastreamento, inseguimento del sole, motorizzato inseguimento solare Les capteurs pour Arduino et Raspberry PiTutoriels et projets

Pour devenir maker, vous avez seulement besoin de rêver de construire quelque chose qui rend le monde meilleur... ou tout simplement quelque chose d’utile dans votre quotidien. Ce livre est le guide qu’il vous faut : pratique et complet, il fera de vous le héros de la nouvelle révolution industrielle. Il montre comment transformer vos idées en projets concrets en utilisant les techniques d’aujourd’hui comme le prototypage, l’impression 3D et la programmation. Grâce à des explications claires et précises, ce livre vous aidera à libérer votre créativité en concrétisant vos projets.

D□FIS DE L’AUTOMATISATION DES SYST□MES SOCIOTECHNIQUES

Editions Eyrolles

Le langage Java et le nano-ordinateur Raspberry Pi sont deux outils incroyablement populaires et pédagogiques dans le monde des technologies actuelles. Cet ouvrage les réunit, dans le but de vous apprendre à programmer en Java en réalisant différents projets simples d'électronique avec un Raspberry Pi 3 (modèles B, B+, A+ et Zero WH). Le livre débute par l'installation et l'utilisation de l'environnement de développement Eclipse pour Java, puis présente le port GPIO du Raspberry Pi, en s'aidant des schémas produits par Fritzing. Il utilise ensuite des scripts Python pour tester des composants montés sur une platine de test. L'apprentissage de Java s'effectue en douceur à l'aide de la librairie Pi4J qui gère le port GPIO : d'abord avec des LED, puis en utilisant un relais et différents capteurs (de mouvement, lumière, température...). Vous apprendrez aussi à programmer un serveur web en Java grâce à l'accès Wi-Fi du Raspberry Pi. Enfin, vous manipulerez une base de données SQLite avant de réaliser le projet final : l'envoi d'un e-mail depuis le Raspberry Pi avec la photo de l'intrus entré dans votre logement ! Ce livre d'une grande richesse de contenu est complété par 120 exercices corrigés, dont les solutions sont disponibles en ligne. À qui s'adresse ce livre ? Aux débutants en programmation Java Aux amateurs d'électronique souhaitant programmer en Java Aux étudiants et aux makers

Devenez Maker! First Interactive

L’anthropotechnologie concentre ses actions depuis trente ans sur l’étude et l’amélioration des conditions de travail et de vie

des populations à travers le monde. Elle oriente les acteurs des processus de conception en les rendant attentifs au « facteur humain », à ses composantes sociales, culturelles et environnementales. Elle valorise par conséquent une conception des techniques respectueuse des personnes, de leurs manières de penser et d'agir dans des contextes spécifiques. Cet ouvrage relate l'évolution et l'institutionnalisation récente de cette discipline dans le monde de l'Université et des Hautes Ecoles. Des projets sont présentés et les dynamiques de coconception sont analysées. Toujours soucieuses de répondre aux contextes du terrain, ces dynamiques fédèrent des ensembles de compétences souvent antagonistes.

Programmation Arduino BoD - Books on Demand

NFC is a world standard since 2004 which is now within every smartphone on the market. Such a standard enables us to do mobile transactions (mobile payment) in a secure way along with many other information- based tap'n play operations. This book has a double role for computer scientists (from bachelor students in CS to IT professionals).

50 MONTAGES P□DAGOGIQUES AVEC ARDUINO

First Interactive

Toutes les matières des nouveaux programmes de Seconde en un seul ouvrage : français, maths, sciences numériques et technologie, histoire-géo, EMC, physique-chimie, SVT, anglais, espagnol, SES. Pour réussir sa 2de et préparer son passage en 1re. Sur chaque thème du programme, dans chaque discipline • L'essentiel du cours • La méthode ou le document clé • Un entraînement progressif : quiz, exercices d'application • Les corrigés détaillés de tous les exercices En accès gratuit, avec l'achat du livre, sur le site www.annabac.com • Des parcours de révision interactifs proposant, pour chaque thème du programme : des fiches, des quiz, des exercices et sujets corrigés • Des conseils pour bien s'orienter

G□OGRAPHIE DE L'ENVIRONNEMENT

Lulu.com

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 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 dying 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 CO$_2$) 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, ВС-Tracking-Systems, Solar-трекеры и ВС 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 ВС 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 солнце 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. 這本書詳細介紹了全自動太陽能跟踪，太陽跟踪系統的出現，太陽能跟踪器和太陽跟踪系統。智能全自動太陽能跟踪器是定向向著太陽的有效載荷設備。這種可編程計算機的太陽能跟踪裝置，包括太陽跟踪，太陽能跟踪系統，以及微控制器，微處理器和/或基於PC機的太陽跟踪控制，以定向太陽能反射器，太陽透鏡，光電板或其他光學配置朝向太陽的原理。機動空間框架和運動系統，確保運動動力學和採用的驅動技術和傳動原理引導光學配置，如曼金，拋物線，圓錐曲線，或卡塞格林式太陽能集熱器面向太陽，不斷跟隨太陽運動的輪廓。 從陽光透過太陽能跟踪器或實用的太陽能跟踪系統利用電力，可再生能源控制的自動化系統需要自動太陽跟踪軟件和太陽位置算法來實現控制與自動化架構，電路

板和硬件的動態運動控制。上軸太陽跟踪系統，如高度，方位角雙軸或多軸太陽跟踪系統使用太陽跟踪算法或光線追踪傳感器或軟件，以確保通過天空中太陽的通道被跟踪的高精度的自動太陽跟踪器的應用，通過正確的夏至，春分太陽和冬至。一種高精度太陽位置計算器或太陽位置算法是這樣的自動太陽能跟踪系統的設計和施工中的重要一步。

Solar Tracking, Inseguimento Solare, Sol Tracking, Sol de Seguimiento : High precision solar position algorithms, programs, software and source-code for computing the solar vector, solar coordinates & sun angles in Microprocessor, PLC, Arduino, PIC and PC-based sun tracking devices or dynamic sun following hardware Editions Eyrolles

Processing est un langage de programmation dédié à la production artistique. Grâce à ses nombreux modules additionnels, il ne se limite pas à la création visuelle et peut communiquer avec des dispositifs électroniques de type Arduino et manipuler du son, de la vidéo, etc. Cet ouvrage tient compte des nouveautés introduites par la version Processing 3 qui est sortie fin 2015. Cet ouvrage d’initiation a été conçu pour : les créateurs qui veulent produire des installations interactives à l’aide de périphériques tels que souris, caméra, capteur de mouvements, ou bien encore en association avec une carte de prototypage Arduino. les graphistes qui pourront générer des motifs, des visuels ou des data-visualisations programmées, fixes, animées ou interactives. et tous ceux qui veulent s’initier à la programmation car Processing qui est un langage à la fois simple, puissant et bien conçu est un excellent outil d’initiation à l’écriture de code informatique.

toutes les matières de Seconde - nouveaux programmes du lycée Editions Eyrolles

Le prototypage est une étape indispensable dans tout processus de création : il permet d’éprouver un design, de valider ou de préciser des choix ergonomiques, techniques et esthétiques, ou encore d’anticiper les éventuels problèmes de production. À ce titre, les prototypes physiques, qui autorisent des manipulations inconcevables sur écran, restent incontournables. Complet et didactique, cet ouvrage s’articule autour de 21 chapitres : Les chapitres 1 à 6 présentent les usages d’un prototype, l’aménagement d’un atelier et l’équipement, en proposant diverses études de cas élaborées par des designers de renom, et insistent sur les questions d’hygiène et de sécurité. Les chapitres 7 à 11 abordent les techniques (fabrication additive ou soustractive, moulage, collage...) et les outils de prototypage, tout en soulignant la complémentarité des méthodes numériques et manuelles. Les chapitres 12 à 21 sont consacrés à la fabrication de maquettes dans les matériaux usuels : papier, carton-mousse, plastique, argile, bois, textile... De nombreux tutoriels, conçus sur mesure, détaillent les étapes à suivre. Publié pour la première fois en français à l’occasion de son actualisation, ce livre de référence se destine aux étudiants et aux professionnels du design produit.

Des procédés aux matériaux Educagri Editions

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 wherin a parabolic dish or lenses are guided by a light sensitive mechanique 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.

H2PTM'19 ISTE Group

Make: Sensors is the definitive introduction and guide to the sometimes-tricky world of using sensors to monitor the physical world. With dozens of projects and experiments for you to build, this book shows you how to build sensor projects with both Arduino and Raspberry Pi. Use Arduino when you need a low-power, low-complexity brain for your sensor, and choose Raspberry Pi when you need to perform additional processing using the Linux operating system running on that device.You'll learn about touch sensors, light sensors, accelerometers, gyroscopes, magnetic sensors, as well as temperature, humidity, and gas sensors.

A la découverte du Raspberry Pi Dunod

WikiPlaza presents a practical and theoretical research in the field of the participatory social construction of public space mediated by information and communication technologies. The work aims to condense the experiences of free software and hacker culture, and the social and independent media movements that emerged at the turn of the twenty-first century, in order to produce "ecosophic machines," that is, new technical, social and mental ecologies that offer an alternative to the dominant neoliberalism and promote and stimulate emancipation, autonomy and spaces of the commons. The subtitle Request For Comments is our small homage to the pioneers of the Internet, and points to the fact that the wikiplaza project is a work in progress, open to anybody who wants to question, use or change it, or to create new versions.

Projets simples et connectés (Bluetooth et Wi-Fi) Dunod

Pars à la découverte d'Arduino ! Amusant et facile à lire, ce livre te fera découvrir l'électronique et surtout le formidable potentiel d'Arduino, un petit microcontrôleur programmable qui permet de réaliser plein de projets ludiques. Avec des composants simples, du carton et de la colle, tu seras guidé dans la mise en oeuvre de montages de difficulté croissante, allant d'un panneau d'affichage de LED à un jeu de labyrinthe à bille. Combinant avec intelligence théorie et pratique, cet ouvrage fera de toi un pro d'Arduino et des circuits électroniques. Dans notre société toujours plus numérique, cela te donnera un super avantage pour la suite de ton parcours scolaire. Dans ce livre, tu fabriqueras : un carillon a vent électronique un mini coffre-fort à combinaison une boule de cristal qui s'illumine par magie un labyrinthe à bille qui mémorise ton score un affichage lumineux sur la manche d'un vêtement et bien d'autres projets ! A qui s'adresse cet ouvrage ? Aux 10-15 ans, parents et enseignants. Sur www.editions-eyrolles.com/go/arduino Télécharge toutes les ressources (code source, vidéos) du livre.

Les machines à commande numérique dpr-barcelona

Ce livre s'adresse aussi bien à un débutant qui souhaite découvrir

le fonctionnement d'Arduino pour créer des objets intelligents qu'aux utilisateurs confirmés souhaitant rafraîchir leurs connaissances ou trouver de nouvelles idées pour la création de leurs projets. Il peut également être utile aux professeurs de collèges ou de lycées souhaitant enseigner l'électricité, l'électronique, la domotique ou le codage ou encore aux makers et amateurs de DIY qui aiment démonter et modifier les objets déjà créés... Les premiers chapitres présentent l'Arduino et ses différents modèles et le matériel nécessaire. L'auteur consacre ensuite un chapitre aux notions d'électricité indispensables. Il y détaille aussi les différentes sources d'alimentation acceptées par l'Arduino et les principaux composants électroniques. Un chapitre est consacré aux principaux langages de programmation de l'Arduino et à l'utilisation de l'IDE Arduino sous Windows, Mac OS X, Linux, Android. D'autres environnements comme Arduino Web Editor, la programmation par blocs (Ardublock, Scratch, Blockly), un Arduino virtuel (tinkercad.com), les problèmes les plus couramment rencontrés et l'optimisation du code sont également étudiés. Les chapitres suivants présentent les principes de base du codage illustrés par des exemples concrets en utilisant tout d'abord les composants électroniques les plus courants (LED, boutons, résistances, potentiomètres, buzzer), puis des composants et modules plus spécialisés comme les capteurs (analogiques ou numériques), les relais, les moteurs ou des modules d'affichage (à LED ou LCD), de lecture/écriture (RFID, carte SD) ou de gestion du temps (horloge en temps réel). L'auteur explore ensuite les nombreuses façons de communiquer avec l'Arduino (bus I2C, liaisons série, Bluetooth, radio, infrarouge, Ethernet, WIFI, ou encore avec le Raspberry Pi en USB). La fabrication d'un clone rudimentaire de l'Arduino à partir d'un microcontrôleur (ATTiny ou ATMEGA328) est détaillée. De même, les particularités de certaines cartes électroniques (moins connues que l'Arduino Uno), comme l'Arduino Leonardo, l'ESP8266, la WeMos ou la Kitco (console de jeu portable basée sur l'ATMEGA328) sont expliquées. Le dernier chapitre regroupe les principales instructions de l'IDE Arduino permettant de retrouver facilement une fonction pour en vérifier la syntaxe. Tout au long du livre et pour illustrer ses propos, l'auteur vous fera découvrir comment gérer des feux de circulation, envoyer un message en morse, créer un appareil enregistrant l'évolution des températures, jouer de la musique avec des bananes, fabriquer une manette de jeu, un clone du jeu Simon... Les sketchs utilisés dans les chapitres 6 à 9 sont disponibles en téléchargement sur le site www.editions-eni.fr.

Programmer avec Arduino en s'amusant pour les nuls De Boeck Supérieur

Apprenez à créer vos premiers programmes créatifs avec Arduino ! Fonctionnant comme un livre de recettes créatives, cet ouvrage vous apprendra à créer des projets de toutes sortes avec Arduino. Ce livre permet aussi de revoir les bases et l'histoire d'Arduino, à comprendre le matériel et ses principes de fonctionnement. Vous apprendrez à utiliser divers capteurs et composants utiles au développement de vos projets. Vous pourrez ainsi programmer : De petits éléments de domotique ; Un stroboscope ; Un dessous de verre interactif ; La création d'instruments de musique (theremin, synthétiseur laser), et d'une pédale d'effet pour la guitare ; Une plante qui twitte son état (chaud, soif), et s'auto arrose selon l'heure ; Un compteur Geiger

pour mesurer la radioactivité ; Un bras articulé, robot quadripode etc.

Le num□rique □ l'□re de l'Internet des objets, de l'hypertexte □ l'hyper-objet

Gerro Prinsloo
Petit mais costaud ! Avec plus de deux millions d'exemplaires écoulés en moins de deux ans, le Raspberry Pi est incontestablement le roi des nano-ordinateurs. De la taille d'une carte de crédit, sans écran ni clavier, et d'un prix modique, il s'avère pourtant suffisamment puissant et ouvert pour offrir une grande variété d'applications : robot, station météo, serveur web, média center, PC de bureau... Cet ouvrage vous permettra d'appréhender le formidable potentiel de cet ordinateur, avec à la clé de petits programmes et des projets simples à réaliser. Vous serez ainsi amené à coder en Python et en Scratch, à manipuler des sons et des images avec Pygame, à communiquer via les broches d'entrées-sorties, à intégrer des périphériques, et beaucoup d'autres choses encore. A qui s'adresse ce livre ? Aux makers, développeurs, électroniciens, hackers, designers, bricoleurs, bidouilleurs, artistes... Aux amateurs comme aux professionnels Sur www.serialmakers.com Téléchargez le code source des exemples de l'ouvrage Consultez les compléments (liens utiles, news, etc.)
Processing Maker Media, Inc.
This book details Solar-Tracking, Automatic Sun-Tracking-Systems and Solar-Trackers. Book and literature review is ideal for sun and moon tracking in solar applications for sun-rich countries such as the USA, Spain, Portugal, Mediterranean, Italy, Greece, Mexico, Portugal, China, India, Brazil, Chili, Argentina, South America, UAE, Saudi Arabia, Middle East, Iran, Iraq, etc. A solar tracker is a device that orients a payload toward the sun. Like a satellite tracker or moon tracker, it tracks the celestial object in the sky on its orbital path of apparent movement. A 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 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. 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 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++, 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), Xeon, Atmel megaAVR, 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 energy and concentrated solar devices, including 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 dying 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 CO$_2$) 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 and Simulink 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. 这本书详细介绍了全自动太阳能跟踪，太阳跟踪系统的出现，太阳能跟踪器和太阳跟踪系统。智能全自动太阳能跟踪器是定向向着太阳的有效载荷设备。这种可编程计算机的太阳能跟踪装置，包括太阳跟踪，太阳能跟踪系统，以及微控制器，微处理器和/或基于PC机的太阳跟踪控制，以定向太阳能反射器，太阳透镜，光电板或其他光学配置朝向太阳的原理。机动空间框架和运动系统，确保运动动力学和采用的驱动技术和传动原理引导光学配置，如曼金，抛物线，圆锥曲线，或卡塞格林式太阳能集热器面向太阳，不断跟随太阳运动的轮廓。从阳光透过太阳能跟踪器或实用的太阳能跟踪系统利用电力，可再生能源控制的自动化系统需要自动太阳跟踪软件和太阳位置算法来实现控制与自动化架构，电路板和硬件的动态运动控制。上轴太阳跟踪系统，如高度，方位角双轴或多轴太阳跟踪系统使用太阳跟踪算法或光线追踪传感器或软件，以确保通过天空中太阳的通道被跟踪的高精度的自

动太阳跟踪器的应用，通过正确的夏至，春分太阳和冬至。一种高精度太阳位置计算器或太阳位置算法是这样的自动太阳能跟踪系统的设计和施工中的重要一步。 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 BC, таких как высота-азимут двойной оси или многоосевые солнечные системы трекер использовать алгоритм отслеживания солнце 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 BC калькулятор или положение солнца алгоритм это важный шаг в проектировании и строительстве автоматической системой солнечной слежения.

Apprivoisez l'électronique et le codage Editions Eyrolles

Un peu de théorie, beaucoup de pratique ! Aujourd’hui, les réseaux informatiques sont partout : nous les utilisons au quotidien dans ce monde hyperconnecté où même les objets s’échangent des données (Internet des objets). Mais comment fonctionnent ces réseaux ? Comment partagent-ils des informations ? Comment peuvent-ils être reliés à des objets ? Sans aucun prérequis nécessaire, cet ouvrage vous fournira toutes les réponses à ces questions, au travers de petits projets amusants basés sur l’ESP32, une carte à microcontrôleur simple d’emploi et d’un prix modique. Muni d’un ordinateur, d’une tablette ou d’un smartphone, vous découvrirez ainsi comment distinguer les éléments constitutifs d’un réseau, le tester, identifier des périphériques, échanger des données en TCP, ou encore créer un serveur web. Vous serez également initié à l’Internet des objets en fabriquant votre propre objet connecté ! Avec ce livre ludique, vous apprendrez donc en pratiquant. À qui s’adresse ce livre ? Aux enseignants et élèves de collèges/lycées Aux associations, clubs d’électronique, bibliothèques...

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