

**SPEED CONTROL OF A DC MOTOR USING  
MICROCONTROLLER 8051**

**A PROJECT REPORT**

*Submitted by*

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**JNTU HYDERABAD : 500085**

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# Microcontroller Based Motor Controller Project Report

**JE Gale**



## **Microcontroller Based Motor Controller Project Report:**

**An Intel 80C196KB Microcontroller Based Implementation of the MVVS Algorithm for the Cornell Electric Vehicle** William Dill,1993      Microcontroller-based System Controller for a Hybrid Electric Vehicle John Hsu,2002      **A**

**Microcontroller Based Control System for a Split Parallel Hybrid Electric Vehicle** Tareq Nisar Aryne,2001

**Scientific and Technical Aerospace Reports** ,1995      **Robotic Snake Arm Electrical System Project Report** Jorel Luyando,2004      Cornell University Courses of Study Cornell University,1996      **Monthly Catalogue, United States**

**Public Documents** ,1995      **Electronic Throttle Control** Jason Michael Dirner,2003      *Monthly Catalog of United States Government Publications* United States. Superintendent of Documents,1995 February issue includes Appendix entitled Directory of United States Government periodicals and subscription publications September issue includes List of depository libraries June and December issues include semiannual index      **Proceedings** American Society for Engineering Education.

Conference,1995      **Annual Conference Proceedings** American Society for Engineering Education. Conference,1995

**Rehabilitation R & D progress reports 1991** ,1983      *Robotic Snakearm Electrical and Control System* Danny Chekong Chow,2005      *Programming and Customizing the OOPic Microcontroller* Dennis Clark,2003 this authoritative guide delves deeply into this groundbreaking technology and delivers a programming guide and application notes dedicated to the OOPic environment This title includes a full object listing as well as an IDE Integrated Development Interface hardware and software guide and a CD OM with all project and experiment codes that you incorporate to customise your own projects Stay ahead of the robotics curve tap into the power of OOPic microcontrollers with this indispensable volume

**Practical Solar Tracking Automatic Solar Tracking Sun Tracking Автоматическое удержание Солнечная слежения ВС** Gerro Prinsloo,Robert Dobson,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

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information system In this way geospatial methods on solar environment interaction makes 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

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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 CO<sub>2</sub> 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 pinpoints 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 helps 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 increases 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 robotics 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 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 means. 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, thermosyphon, 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 Solar Tracking Tracking Systems Solar Tracker Systems Tracker PC      **Standard & Poor's Stock Reports** ,2006      **Integrating Universal Serial Bus Functionality Into the Ambulatory Blood Pressure Monitor Project** Christopher Foster,2003      **Government Reports Announcements & Index** ,1995      **Science Abstracts** ,1995      **Feasibility of a Start-up Venture in Motor Controllers** Deepak K. Manoharlal,1994

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## **Table of Contents Microcontroller Based Motor Controller Project Report**

1. Understanding the eBook Microcontroller Based Motor Controller Project Report
  - The Rise of Digital Reading Microcontroller Based Motor Controller Project Report
  - Advantages of eBooks Over Traditional Books
2. Identifying Microcontroller Based Motor Controller Project Report
  - Exploring Different Genres
  - Considering Fiction vs. Non-Fiction
  - Determining Your Reading Goals
3. Choosing the Right eBook Platform
  - Popular eBook Platforms
  - Features to Look for in an Microcontroller Based Motor Controller Project Report
  - User-Friendly Interface

4. Exploring eBook Recommendations from Microcontroller Based Motor Controller Project Report
  - Personalized Recommendations
  - Microcontroller Based Motor Controller Project Report User Reviews and Ratings
  - Microcontroller Based Motor Controller Project Report and Bestseller Lists
5. Accessing Microcontroller Based Motor Controller Project Report Free and Paid eBooks
  - Microcontroller Based Motor Controller Project Report Public Domain eBooks
  - Microcontroller Based Motor Controller Project Report eBook Subscription Services
  - Microcontroller Based Motor Controller Project Report Budget-Friendly Options
6. Navigating Microcontroller Based Motor Controller Project Report eBook Formats
  - ePub, PDF, MOBI, and More
  - Microcontroller Based Motor Controller Project Report Compatibility with Devices
  - Microcontroller Based Motor Controller Project Report Enhanced eBook Features
7. Enhancing Your Reading Experience
  - Adjustable Fonts and Text Sizes of Microcontroller Based Motor Controller Project Report
  - Highlighting and Note-Taking Microcontroller Based Motor Controller Project Report
  - Interactive Elements Microcontroller Based Motor Controller Project Report
8. Staying Engaged with Microcontroller Based Motor Controller Project Report
  - Joining Online Reading Communities
  - Participating in Virtual Book Clubs
  - Following Authors and Publishers Microcontroller Based Motor Controller Project Report
9. Balancing eBooks and Physical Books Microcontroller Based Motor Controller Project Report
  - Benefits of a Digital Library
  - Creating a Diverse Reading Collection Microcontroller Based Motor Controller Project Report
10. Overcoming Reading Challenges
  - Dealing with Digital Eye Strain
  - Minimizing Distractions
  - Managing Screen Time
11. Cultivating a Reading Routine Microcontroller Based Motor Controller Project Report
  - Setting Reading Goals Microcontroller Based Motor Controller Project Report
  - Carving Out Dedicated Reading Time

12. Sourcing Reliable Information of Microcontroller Based Motor Controller Project Report
  - Fact-Checking eBook Content of Microcontroller Based Motor Controller Project Report
  - Distinguishing Credible Sources
13. Promoting Lifelong Learning
  - Utilizing eBooks for Skill Development
  - Exploring Educational eBooks
14. Embracing eBook Trends
  - Integration of Multimedia Elements
  - Interactive and Gamified eBooks

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