
An Enhanced Mppt Technique For Small Scale Wind Energy

2020 11th Power Electronics, Drive Systems, and Technologies Conference (PEDSTC)
Advances in Solar Photovoltaic Power Plants
Optimization of Photovoltaic Power Systems
Advances in Energy and Power Systems
Evolution in Signal Processing and Telecommunication Networks
Introduction to AI Techniques for Renewable Energy System
Advances in Smart Grid Technology
Enhanced MPPT Controllers for Smart Grid Applications
Advanced Intelligent Systems for Sustainable Development (AI2SD'2018)
Distributed Energy Resources in Microgrids
Proceedings of International Conference on Artificial Intelligence, Smart Grid and
Smart City Applications
Proceedings of ICEEE 2021
Select Proceedings of PECCON 2019—Volume I
Proceedings of ICSCN 2021

8th EAI International Conference, ICAST 2020, Bahir Dar, Ethiopia, October 2-4, 2020,
Proceedings, Part I

Advances in Communication and Computational Technology

Artificial Intelligence and Heuristics for Smart Energy Efficiency in Smart Cities

An Introduction to Theory, Modeling with MATLAB-SIMULINK, and the Role of Soft
Computing Techniques

Proceedings of SIS 2021

Design and Application

Proceedings of MISS 2020

Proceedings of the International Conference on Advancement of Computer

Communication and Electrical Technology (ACCET 2016), West Bengal, India, 21-22
October 2016

Technology, Methods, and Applications

ICASISSET 2020

Case Study: Tipasa, Algeria

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Applied Soft Computing and Embedded System Applications in Solar Energy
Vol 2: Advanced Intelligent Systems Applied to Energy
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BRYCEN CAROLYN

2020 11th Power
Electronics, Drive
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Technologies Conference

(PEDSTC) Springer Nature
This textbook starts with a
review of the principles of
operation, modeling and
control of common solar
energy and wind-power
generation systems
before moving on to

discuss grid compatibility,
power quality issues and
hybrid models of Solar PV
and Wind Energy
Conversion Systems
(WECS).
MATLAB/SIMULINK models
of fuel cell technology and
associated converters are

discussed in detail. The impact of soft computing techniques such as neural networks, fuzzy logic, and genetic algorithms in the context of solar and wind energy is explained with practical implementation using MATLAB/SIMULINK models. This book is intended for final year undergraduate, post-graduate and research students interested in understanding the modeling and control of Solar PV and Wind Energy Conversion Systems based on MATLAB/SIMULINK. - Each

chapter includes "Learning Objectives" at the start, a "Summary" at the end, and helpful Review Questions - Includes MATLAB/SIMULINK models of different control strategies for power conditioning units in the context of Solar PV - Presents soft computing techniques for Solar PV and WECS, as well as MATLAB/SIMULINK models, e.g. for wind turbine topologies and grid integration - Covers hybrid solar PV and Wind Energy Conversion

Systems with converters and MATLAB/SIMULINK models - Reviews harmonic reduction in Solar PV and Wind Energy Conversion Systems in connection with power quality issues - Covers fuel cells and converters with implementation using MATLAB/SIMULINK.

Advances in Solar Photovoltaic Power

Plants Springer Nature
This book is a collection of selected peer-reviewed papers presented at the International Conference on Signal Processing and Communication (ICSC

2018). It covers current research and developments in the fields of communications, signal processing, VLSI circuits and systems, and embedded systems. The book offers in-depth discussions and analyses of latest problems across different sub-fields of signal processing and communications. The contents of this book will prove to be useful for students, researchers, and professionals working in electronics and electrical engineering, as well as other allied fields.

Optimization of Photovoltaic Power Systems MDPI
The Power Electronics, Drive Systems, and Technologies Conference (PEDSTC) aims to bring together academic scientists, leading engineers, industry researchers, and scholar students to exchange and share their experiences and research results about all aspects of power electronics and electrical drives
Advances in Energy and Power Systems Springer
This book comprises the

select proceedings of the International Conference on Power Engineering Computing and Control (PECCON) 2019. This volume focuses on the different renewable energy sources which are integrated in a smart grid and their operation both in the grid connected mode and islanded mode. The contents highlight the role of power converters in the smart grid environment, battery management, electric vehicular technology and electric charging station as a load for the power

network. This book can be useful for beginners, researchers as well as professionals interested in the area of smart grid technology.

Evolution in Signal Processing and Telecommunication Networks Springer

The contributed volume aims to explicate and address the difficulties and challenges for the seamless integration of two core disciplines of computer science, i.e., computational intelligence and data mining. Data Mining aims at the

automatic discovery of underlying non-trivial knowledge from datasets by applying intelligent analysis techniques. The interest in this research area has experienced a considerable growth in the last years due to two key factors: (a) knowledge hidden in organizations' databases can be exploited to improve strategic and managerial decision-making; (b) the large volume of data managed by organizations makes it impossible to carry out a manual analysis. The book

addresses different methods and techniques of integration for enhancing the overall goal of data mining. The book helps to disseminate the knowledge about some innovative, active research directions in the field of data mining, machine and computational intelligence, along with some current issues and applications of related topics.

[Introduction to AI Techniques for Renewable Energy System](#) Springer
Solar energy is a strong

contender among the sustainable alternatives that offer practical potential for replacing increasingly depleted fossil fuels and supplying the world's growing energy demands. However, despite its sustainability, the spread of its use has been limited due to the high costs arising from its inadequate efficiency. With this challenge as motivation, the goal of the research presented in this thesis was to contribute to the expansion of the utilization of photovoltaic

(PV) systems. To achieve this goal, the work was approached from two perspectives: 1) facilitation of research into PV systems through the enhancement of existing PV models and simulation tools, which are highly complex and necessitate substantial computational effort, and 2) improvement of the efficiency of PV systems through the development of new techniques that mitigate power losses in PV systems. With respect to the first perspective, two innovative modeling

approaches are introduced. The first, a new circuit model for PV systems, features accuracy comparable to that of existing models but with a reduced computational requirement. The proposed model mimics the accuracy of existing models without their dependency on a transcendental implicit equation, thus providing a shorter computational time without sacrificing the accuracy. The second modeling approach, which was developed for use in

model-based online applications, involved the creation of a fast tool for estimating the power peaks of the power-voltage curves for partially shaded PV systems. Utilizing a PV circuit model for estimating the power peaks in large PV systems through the simulation of their entire power curve consumes extensive computational time, which is unacceptable for online applications even with the use of the proposed circuit model mentioned above. Rather than

employing a PV circuit model to find the power peaks, the proposed tool relies on simple rules that govern the formation of power peaks in a partially shaded PV system as a means of establishing the power peaks directly, thus significantly reducing the time required. The second perspective led to the development of three methods for reducing different types of power losses prevalent in PV systems. The first is an MPPT technique for use with partially shaded PV systems that exhibit

multiple power peaks in their output power curves. The proposed MPPT is uniquely distinguishable because of its ability to eliminate misleading power losses in PV systems. Rather than searching and scanning heuristically for the GMPP, it employs the fast modeling tool mentioned above to calculate the location of the GMPP deterministically, thus avoiding the need for curve scanning. The irradiance values required by the modeling tool are estimated innovatively

using captured images of the PV modules obtained by an optical camera. The objective of the second was to reduce the mismatch power losses common in partially shaded PV systems through the development of an improved PV reconfiguration method. The reconfiguration proposed in this thesis is produced by a simple algorithm that establishes a better configuration and requires only negligible computational time for ensuring the minimization of mismatch power losses.

The third is an enhanced maximum power point tracker (MPPT) for reducing tracking power losses in PV systems that operate under rapidly changing irradiance levels. The proposed method combines model-based and heuristic techniques in order to accelerate the tracking speed and thus decrease this type of loss. In the proposed MPPT, the temperature measurements typically necessary in any model-based PV application have been eliminated through

reliance on a new set of equations capable of estimating the temperature through the utilization of current and voltage measurements.

Advances in Smart Grid Technology Springer

Nature

This book focuses on the latest research and developments in photovoltaic (PV) power plants, and provides extensive coverage of fundamental theories, current research and developmental activities, and new approaches intended to overcome a

number of critical limitations in today's grid integration technologies. The design and implementation process for large-scale solar PV power plants is introduced. The content provided will actively support the development of future renewable power plants and smart grid applications. The book will be of interest to researchers, professionals and graduate students in electrical and electronics fields seeking to understand the related technologies involved in

PV power plants. *Enhanced MPPT Controllers for Smart Grid Applications* Springer Nature
This two-volume set constitutes the refereed post-conference proceedings of the 8th International Conference on Advancement of Science and Technology, ICAST 2020, which took place in Bahir Dar, Ethiopia, in October 2020. The 74 revised full papers were carefully reviewed and selected from more than 200 submissions of which 157

were sent out for peer review. The papers present economic and technologic developments in modern societies in 6 tracks: Chemical, food and bio-process engineering; Electrical and computer engineering; IT, computer science and software engineering; Civil, water resources, and environmental engineering; Mechanical and industrial engineering; Material science and engineering. [Advanced Intelligent Systems for Sustainable](#)

Development

(AI2SD'2018) Springer
Nature

This book discusses the latest developments and outlines future trends in the fields of microelectronics, electromagnetics and telecommunication. It contains original research works presented at the International Conference on Microelectronics, Electromagnetics and Telecommunication (ICMEET 2021), held in Bhubaneswar, Odisha, India during 27-28 August, 2021. The papers

were written by scientists, research scholars and practitioners from leading universities, engineering colleges and R&D institutes from all over the world and share the latest breakthroughs in and promising solutions to the most important issues facing today's society.

Distributed Energy Resources in

Microgrids Springer

This book introduces and analyses the latest maximum power point tracking (MPPT) techniques, which can effectively reduce the cost

of power generated from photovoltaic energy systems. It also presents a detailed description, analysis, and comparison of various MPPT techniques applied to stand-alone systems and those interfaced with electric utilities, examining their performance under normal and abnormal operating conditions. These techniques, which can be conventional or smart, are a current hot topic, and this book is a valuable reference resource for academic

researchers and industry professionals who are interested in exploring and implementing advanced MPPT for photovoltaic systems. It is also useful for graduate students who are looking to expand their knowledge of MPPT techniques.

Proceedings of International Conference on Artificial Intelligence, Smart Grid and Smart City Applications Springer

This book gathers papers presented at the International Conference on Advanced Intelligent

Systems for Sustainable Development (AI2SD-2018), which was held in Tangiers, Morocco on 12–14 July 2018. In addition to the latest research in the field of energy, it offers new solutions, tools and effective techniques, and provides essential information on smart grids, renewable and economical energy. Further, it addresses modeling, storage management and decision support in the field of energy, offering a valuable guide for

researchers, professionals and all those who are interested in the development of advanced intelligent systems in the energy sector.

Proceedings of ICEEE

2021 Springer Nature

This book presents high-quality peer-reviewed papers from the International Conference on Advanced Communication and Computational Technology (ICACCT) 2019 held at the National Institute of Technology, Kurukshetra, India. The contents are broadly

divided into four parts: (i) Advanced Computing, (ii) Communication and Networking, (iii) VLSI and Embedded Systems, and (iv) Optimization Techniques. The major focus is on emerging computing technologies and their applications in the domain of communication and networking. The book will prove useful for engineers and researchers working on physical, data link and transport layers of communication protocols. Also, this will be useful for industry professionals

interested in manufacturing of communication devices, modems, routers etc. with enhanced computational and data handling capacities.

Select Proceedings of PECCON 2019—Volume I
Springer Nature

Due to the complexity, and heterogeneity of the smart grid and the high volume of information to be processed, artificial intelligence techniques and computational intelligence appear to be some of the enabling technologies for its future

development and success. The theme of the book is “Making pathway for the grid of future” with the emphasis on trends in Smart Grid, renewable interconnection issues, planning-operation-control and reliability of grid, real time monitoring and protection, market, distributed generation and power distribution issues, power electronics applications, computer-IT and signal processing applications, power apparatus, power engineering education and industry-institute

collaboration. The primary objective of the book is to review the current state of the art of the most relevant artificial intelligence techniques applied to the different issues that arise in the smart grid development.

Proceedings of ICSCN 2021 Springer

This book comprises select proceedings of the International Conference on Advancement in Energy, Drives, and Control. It covers pioneering topics in the field of renewable energy and power management,

including energy storage, distribution, and control. It also discusses methods of optimizing power distribution and generation systems. This book is of use to researchers, professionals, and students from across engineering disciplines. *8th EAI International Conference, ICAST 2020, Bahir Dar, Ethiopia, October 2-4, 2020, Proceedings, Part I* Modern Maximum Power Point Tracking Techniques for Photovoltaic Energy Systems

This book highlights recent advances and emerging technologies that utilize computational intelligence in signal processing, computing, imaging science, artificial intelligence, and their applications. It covers all branches of artificial intelligence and machine learning that are based on computation at some level, e.g. artificial neural networks, evolutionary algorithms, fuzzy systems, and automatic medical identification systems. Exploring recent trends in research and

applications, the book offers a valuable resource for professors, researchers, and engineers alike.

Advances in Communication and Computational Technology Springer Nature

This book presents the proceedings of the 5th International Conference on Advanced Intelligent Systems and Informatics 2019 (AISI2019), which took place in Cairo, Egypt, from October 26 to 28, 2019. This international and interdisciplinary

conference, which highlighted essential research and developments in the fields of informatics and intelligent systems, was organized by the Scientific Research Group in Egypt (SRGE). The book is divided into several sections, covering the following topics: machine learning and applications, swarm optimization and applications, robotic and control systems, sentiment analysis, e-learning and social media education, machine and deep learning algorithms,

recognition and image processing, intelligent systems and applications, mobile computing and networking, cyber-physical systems and security, smart grids and renewable energy, and micro-grid and power systems.

Artificial Intelligence and Heuristics for Smart Energy Efficiency in Smart Cities Springer

"Over the past years, the energy demand has been steadily growing and so methods of how to cope with this staggering

increase are being researched and utilized. One method of injecting more energy to the grid is renewable energy, which has become in recent years an integral part of any country's power generation plan. Thus, it is a necessity to enhance renewable energy resources and maximize their grid utilization, so that these resources can step up and reduce the over dependency of global energy production on depleting energy resources. This thesis focuses on solar power

and effective means to enhance its efficiency through the use of different controllers. In this regard, substantial research efforts have been done. However, due to the current market and technological development, more options are made available that are able to boast the efficiency and utilization of renewables in the power mix. In this thesis, an enhanced maximum power point tracking (MPPT) controller has been designed as part of a Photovoltaic (PV)

system to generate maximum power to satisfy load demand. The PV system is designed and simulated using MATLAB (consisting of a solar panel array, MPPT controller, boost converter, and a resistive load). The solar panel chosen for the array is Sun Power SPR- 440NE-WHT-D and the array is designed to produce 150 kW of power. The MPPT controller is designed using three different algorithms and the results are compared to identify each controller's fortes

and drawbacks. The three designed controllers used are based on Perturb and Observe (P&O) algorithm, Incremental Conductance (INC) with an Integral Regulator (IR) and Fuzzy Logic Control (FLC). Each controller was tested under two different scenarios; the first is when the panel array is subjected to constant amount of solar irradiance along with a constant atmospheric temperature and the second scenario has varying solar irradiance and atmospheric temperature.

The performance of these controllers is analyzed and compared in terms of the output power efficiency, system dynamic response and finally the oscillations behavior. After analyzing the results, it is shown that Fuzzy Logic Controller design performed better compared to the other controllers as it had in most cases the highest mean power efficiency and fastest response."-- Abstract.
An Introduction to Theory, Modeling with MATLAB-

SIMULINK, and the Role of Soft Computing Techniques Springer Nature
This book presents ongoing research activities of currently available renewable energy technologies and the approaches towards clean technology for enabling a socio-economic model for the present and future generations to live in a clean and healthy environment. The book provides chapter wise implementation of research works in the area of green energy

technologies with proper methods used with solution strategies and energy efficiency approaches by combining theory and practical applications. Readers are introduced to practical problems of green computation and hybrid resources optimization with solution based approaches from the current research outcomes. The book will be of use to researchers, professionals, and policy-makers alike.

Proceedings of SIS 2021
Springer Nature

We are delighted to introduce the proceedings of the first edition of the 2020 European Alliance for Innovation (EAI) International Conference on Advanced Scientific Innovation in Science, Engineering and Technology. This conference has brought innovative academics, industrial experts researchers, developers and practitioners around the world in the field of Science, Engineering and Technology to a common forum. The technical program of ICASISSET 2020

consisted of 97 full papers, including 6 invited papers in oral presentation sessions at the main conference tracks. The conference tracks were: Innovative Computing, Advanced innovation technology in Communication, Industry automation, hydrogen hybrid machine, computing in medical applications, Image processing and Internet of Things (IoT) and application. Aside from the high-quality technical paper presentations, the technical program also

featured two keynote speeches, one invited talk and two technical workshops. The two keynote speeches were Dr. Hoshang Kolivand, Senior Lecturer, Liverpool John Moores University, United Kingdom and Dr. Sheldon Williamson from Canada Research Chair in Electric Energy Storage Systems for Transportation Electrification and Professor in the Department of Electrical, Computer and Software Engineering, Ontario Tech University. The two

workshops organized were in the topics of Machine learning and Industrial applications. The workshop aimed to gain insights into key challenges, understanding and design criteria of employing recent technologies to develop and implement computational techniques and applications.

Design and Application CRC Press

The book presents the analysis and control of numerous DC-DC converters widely used in several applications such

as standalone, grid integration, and motor drives-based renewable energy systems. The book provides extensive simulation and practical analysis of recent and advanced DC-DC power converter topologies. This self-contained book contributes to DC-DC converters design, control techniques, and industrial as well as domestic applications of renewable energy systems. This volume will be useful for undergraduate/postgraduate students, energy planners, designers,

system analysis, and system governors.

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