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Recurrent Neural Networks for Short-Term Load Forecasting Short-Term Load Forecasting by Artificial Intelligent Technologies Short-Term Load Forecasting 2019 Power System Short Term Load Forecasting Short-Term Load Forecasting 2019 Short-Term Load Forecasting by Artificial Intelligent Technologies Comparative Models for Electrical Load Forecasting Electrical Load Forecasting Short-term Load Forecasting Using Artificial Neural Networks The Application of Artificial Neural Networks to Short Term Load Forecasting Nelder Mead Trained Neural Networks for Short Term Load Forecasting Identification of a Neural Network for Short Term Load Forecasting Short-term Load Forecasting Via Artificial Neural Network Short-term Load Forecasting in an Electric Power System Short-term Load Forecasting Using System-type Neural Network Architecture Short-term Load Forecasting in an Electric Power System Wavelet Neural Network Based Very Short-term Load Forecasting and Prediction Interval Estimation Short-term Load Forecasting for Industrial and Residential Consumers Machine Learning for Load Profile Data Analytics and Short-term Load Forecasting Electric Load Forecasting Using an Artificial Neural Networks Advances in Electric Power and Energy Systems Artificial Intelligence and Soft Computing, Part I Long-Term Electric Load Demand Forecasting and Modeling Power System Very Short-term Load Prediction Applications and Science in Soft Computing Fuzzy System Applications for Short-term Electric Load Forecasting Forecasting and Assessing Risk of Individual Electricity Peaks Data-Intensive Computing in Smart Microgrids Intelligent Systems and Soft Computing for Nuclear Science and Industry The Application of Artificial Neural Networks to Short Term Electrical Load Forecasting and Other Engineering Problems Proceedings of the National Seminar on Applied Systems Engineering and Soft Computing COST Action TU0905 Mid-term Conference on Structural Glass Advances in Intelligent Information Hiding and Multimedia Signal Processing Unifying Electrical Engineering and Electronics Engineering Machine Learning for Sustainable Development □□□□□□□□□□□□□□□□□□□□ Hydrometeorology Advances in Internet, Data and Web Technologies Smart Grid Electric, Electronic and Control Engineering

Recurrent Neural Networks for Short-Term Load Forecasting

2017-11-09

the key component in forecasting demand and consumption of resources in a supply network is an accurate prediction of real valued time series indeed both service interruptions and resource waste can be reduced with the implementation of an effective forecasting system significant research has thus been devoted to the design and development of methodologies for short term load forecasting over the past decades a class of mathematical models called recurrent neural networks are nowadays gaining renewed interest among researchers and they are replacing many practical implementations of the forecasting systems previously based on static methods despite the undeniable expressive power of these architectures their recurrent nature complicates their understanding and poses challenges in the training procedures recently new important families of recurrent architectures have emerged and their applicability in the context of load forecasting has not been investigated completely yet this work performs a comparative study on the problem of short term load forecast by using different classes of state of the art recurrent neural networks the authors test the reviewed models first on controlled synthetic tasks and then on different real datasets covering important practical cases of study the text also provides a general overview of the most important architectures and defines guidelines for configuring the recurrent networks to predict real valued time series

Short-Term Load Forecasting by Artificial Intelligent Technologies

2019-01-29

this book is a printed edition of the special issue short term load forecasting by artificial intelligent technologies that was published in energies

Short-Term Load Forecasting 2019

2021-02-26

short term load forecasting stlf plays a key role in the formulation of economic reliable and secure operating strategies planning scheduling maintenance and control processes among others for a power system and will be significant in the future however there is still much to do in these research areas the deployment of enabling technologies e g smart meters has made high granularity data available for many customer segments and to approach many issues for instance to make forecasting tasks feasible at several demand aggregation levels the first challenge is the improvement of stlf models and their performance at new aggregation levels moreover the mix of renewables in the power system and the necessity to include more flexibility through demand response initiatives have introduced greater uncertainties which means new challenges for stlf in a more dynamic power system in the 2030 50 horizon many techniques have been proposed and applied for stlf including traditional statistical models and ai techniques besides distribution planning needs as well as grid modernization have initiated the development of hierarchical load forecasting analogously the need to face new sources of uncertainty in the power system is giving more importance to probabilistic load forecasting this special issue deals with both fundamental research and practical application research on stlf methodologies to face the challenges of a more distributed and customer centered power system

Power System Short Term Load Forecasting

2006

short term load forecasting stlf plays a key role in the formulation of economic reliable and secure operating strategies planning scheduling maintenance and control processes among others for a power system and will be significant in the future however there is still much to do in these research areas the deployment of enabling technologies e g smart meters has made high granularity data available for many customer segments and to approach many issues for instance to make forecasting tasks feasible at several demand aggregation levels the first challenge is the improvement of stlf models and their performance at new aggregation levels moreover the mix of renewables in the power system and the necessity to include more flexibility through demand response initiatives have introduced greater uncertainties which means new challenges for stlf in a more dynamic power system in the 2030 50 horizon many techniques have been proposed and applied for stlf including traditional statistical models and ai techniques besides distribution planning needs as well as grid modernization have initiated the development of hierarchical load forecasting analogously the need to face new sources of uncertainty in the power system is giving more importance to probabilistic load forecasting this special issue deals with both fundamental research and practical application research on stlf methodologies to face the challenges of a more distributed and customer centered power system

Short-Term Load Forecasting 2019

2021

in last few decades short term load forecasting stlf has been one of the most important research issues for achieving higher efficiency and reliability in power system operation to facilitate the minimization of its operation cost by providing accurate input to day ahead scheduling contingency analysis load flow analysis planning and maintenance of power systems there are lots of forecasting models proposed for stlf including traditional statistical models such as arima sarima armax multi variate regression kalman filter exponential smoothing and so on and artificial intelligence based models such as artificial neural networks anns knowledge based expert systems fuzzy theory and fuzzy inference systems evolutionary computation models support vector regression and so on recently due to the great development of evolutionary algorithms ea and novel computing concepts e g quantum computing concepts chaotic mapping functions and cloud mapping process and so on many advanced hybrids with those artificial intelligence based models are also proposed to achieve satisfactory forecasting accuracy levels in addition combining some superior mechanisms with an existing model could empower that model to solve problems it could not deal with before for example the seasonal mechanism from the arima model is a good component to be combined with any forecasting models to help them to deal with seasonal problems

Short-Term Load Forecasting by Artificial Intelligent Technologies

2019

takes a practical look at how short term forecasting has actually been undertaken and is being developed in public utility organizations

Comparative Models for Electrical Load Forecasting

1985

succinct and understandable this book is a step by step guide to the mathematics and construction of electrical load forecasting models written by one of the world s foremost experts on the subject electrical load forecasting provides a brief discussion of algorithms their advantages and disadvantages and when they are best utilized the book begins with a good description of the basic theory and models needed to truly understand how the models are prepared so that they are not just blindly plugging and chugging numbers this is followed by a clear and rigorous exposition of the statistical techniques and algorithms such as regression neural networks fuzzy logic and expert systems the book is also supported by an online computer program that allows readers to construct validate and run short and long term models step by step guide to model construction construct verify and run short and long term models accurately evaluate load shape and pricing creat regional specific electrical load models

Electrical Load Forecasting

2010-05-26

this book proposes a new optimization algorithm for solving short term load forecasting problem globalized nelder mead is used for training of artificial neural networks nelder mead is fast optimization algorithm with no gradient calculation the weights of neural networks are tuned with the help of nelder mead algorithm to find proficiency of this algorithm australian energy market operator aemo data and california data are taken for testing results show that proposed algorithm outclasses other techniques in literature

Short-term Load Forecasting Using Artificial Neural Networks

2013

this thesis presents a methodology for short term load forecasting using a system type neural network based on semigroup theory a technique referred to as algebraic decomposition is used to decompose a distributed parameter system into a semigroup channel made of coefficient vectors and a function channel made of basis vectors the actual load data is preprocessed by regression to become better correlated to daily time and temperatures a rearrangement method based on the hourly temperature is developed to solve the problem of the roughness of the coefficient vector in the semigroup channel interpolation or extrapolation of coefficient vector can be achieved for each hour using the historical temperatures and the temperature forecast recombination of the basis vector and predicted coefficient vector will give the next day load forecasting load data from new england independent system operator is used to verify the capability of the proposed approach

The Application of Artificial Neural Networks to Short Term Load Forecasting

1993

electric load forecasting is an important research field in electric power industry it plays a crucial role in solving a wide range of tasks of short term planning and operating control of electric power system operating modes load forecasting is carried out in different time spans load forecasting within a current day operating forecasting one day week month ahead load forecasting short term load forecasting one month quarter year ahead load forecasting long term load forecasting so far a great number of both conventional and non conventional electric load forecasting methods and models have been developed the work presents research results of electric load forecasting for electrical power systems using artificial neural networks and fuzzy logic as one of the most advanced and perspective directions of solving this task a theoretical approach to the issues discussed is combined with the data of experimental studies implemented with application of load curves of regional electrical power systems the book is addressed to specialists and researchers concerned with operational control modes of electric power systems

Nelder Mead Trained Neural Networks for Short Term Load Forecasting

2015-06-26

a comprehensive review of state of the art approaches to power systems forecasting from the most respected names in the field internationally advances in electric power and energy systems is the first book devoted exclusively to a subject of increasing urgency to power systems planning and operations written for practicing engineers researchers and post grads concerned with power systems planning and forecasting this book brings together contributions from many of the world s foremost names in the field who address a range of critical issues from forecasting power system load to power system pricing to post storm service restoration times river flow forecasting and more in a time of ever increasing energy demands mounting concerns over the environmental impacts of power generation and the emergence of new smart grid technologies electricity price forecasting has assumed a prominent role within both the academic and industrial arenas short run forecasting of electricity prices has become necessary for power generation unit schedule since it is the basis of every maximization strategy this book fills a gap in the literature on this increasingly important topic following an introductory chapter offering background information necessary for a full understanding of the forecasting issues covered this book introduces advanced methods of time series forecasting as well as neural networks provides in depth coverage of state of the art power system load forecasting and electricity price forecasting addresses river flow forecasting based on autonomous neural network models deals with price forecasting in a competitive market includes estimation of post storm restoration times for electric power distribution systems features contributions from world renowned experts sharing their insights and expertise in a series of self contained chapters advances in electric power and energy systems is a valuable resource for practicing engineers regulators planners and consultants working in or concerned with the electric power industry it is also a must read for senior undergraduates graduate students and researchers involved in power system planning and operation

Identification of a Neural Network for Short Term Load Forecasting

1997

the lnai series reports state of the art results in artificial intelligence research development education at a high level and in both printed and electronic form enjoying tight cooperation with the r d community with numerous individuals as well as with prestigious organizations and societies lnai has grown into the most comprehensive artificial intelligence research forum available the scope of lnai spans the whole range of artificial intelligence and intelligent information processing including interdisciplinary topics in a variety of application fields

Short-term Load Forecasting Via Artificial Neural Network

2010

the major concern for every electrical utility is the ability to provide reliable and uninterrupted service to their customers load forecasting is an important component for power system energy management system precise load forecasting helps the electric utility to make unit commitment decisions reduce spinning reserve capacity and schedule device maintenance plan properly besides playing a key role in reducing the generation cost it is also essential to the reliability of power systems there are three types of load forecasts short term medium term and long term this book focuses on study of short term load forecasting long term demand forecasting presents the first step in planning and developing future generation transmission and distribution facilities in this book study of a real sample shiraz power distribution network for forecasting load growth is done also evaluated various compensation methods from perspectives of long term load forecasting

Short-term Load Forecasting in an Electric Power System

1973

the book covers the theory and application of soft computing techniques namely neural networks fuzzy logic evolutionary computing and complex systems the book is a collection of selected edited papers presented at the 4th conference racs recent advances in soft computing held in nottingham december 2002 it provides the latest developments in applications of soft computing techniques as well as advances in theoretical aspects of soft computing

Short-term Load Forecasting Using System-type Neural Network Architecture

2009

the overarching aim of this open access book is to present self contained theory and algorithms for investigation and prediction of electric demand peaks a cross section of popular demand forecasting algorithms from statistics machine learning and mathematics is presented followed by extreme value theory techniques with examples in order to achieve carbon targets good forecasts of peaks are essential for instance shifting demand or charging battery depends on correct demand predictions in time majority of forecasting algorithms historically were focused on average load prediction in order to model the peaks methods from extreme value theory are applied this allows us to study extremes without making any assumption on the central parts of demand distribution and to predict beyond the range of available data while applied on individual loads the techniques described in this book

can be extended naturally to substations or to commercial settings extreme value theory techniques presented can be also used across other disciplines for example for predicting heavy rainfalls wind speed solar radiation and extreme weather events the book is intended for students academics engineers and professionals that are interested in short term load prediction energy data analytics battery control demand side response and data science in general

Short-term Load Forecasting in an Electric Power System

1973

microgrids have recently emerged as the building block of a smart grid combining distributed renewable energy sources energy storage devices and load management in order to improve power system reliability enhance sustainable development and reduce carbon emissions at the same time rapid advancements in sensor and metering technologies wireless and network communication as well as cloud and fog computing are leading to the collection and accumulation of large amounts of data e g device status data energy generation data consumption data the application of big data analysis techniques e g forecasting classification clustering on such data can optimize the power generation and operation in real time by accurately predicting electricity demands discovering electricity consumption patterns and developing dynamic pricing mechanisms an efficient and intelligent analysis of the data will enable smart microgrids to detect and recover from failures quickly respond to electricity demand swiftly supply more reliable and economical energy and enable customers to have more control over their energy use overall data intensive analytics can provide effective and efficient decision support for all of the producers operators customers and regulators in smart microgrids in order to achieve holistic smart energy management including energy generation transmission distribution and demand side management this book contains an assortment of relevant novel research contributions that provide real world applications of data intensive analytics in smart grids and contribute to the dissemination of new ideas in this area

Wavelet Neural Network Based Very Short-term Load Forecasting and Prediction Interval Estimation

2013

following flins 94 the 1st international workshop on fuzzy logic and intelligent technologies in nuclear science flins 96 aimed to introduce the principles of intelligent systems and soft computing such as fuzzy logic neural networks genetic algorithms and any combination of these three knowledge based expert systems and complex problem solving techniques in nuclear science and industry and in related fields this volume presents carefully selected papers drawn from more than 20 countries it covers theoretical aspects of intelligent systems and soft computing together with their applications in nuclear science and industry contents fuzzy algorithmic and knowledge based decision support in nuclear engineering h j zimmermann problem solving with multiple interdependent criteria better solutions to complex problems c carlsson r fullér functional modelling for integration of human software hardware in complex physical systems m modarres applying the transferable belief model to diagnostic problems p smets application of fuzzy decision making to countermeasure strategies after a nuclear accident x liu d ruan a fuzzy control algorithm for a mobile robot to move pass obstacles b s moon j lee experiments of fuzzy logic control on a nuclear research reactor z liu d ruan intelligent engineering and technology for nuclear power plant operation p p wang x l gu improved method for incipient multiple fault diagnosis with application to nuclear power plant h y chung et al a fuzzy controller for npps g h schildt expert environment for the development of nuclear

power plants failure diagnosis systems p n guido et al integrating information in a real time data visualization system on nuclear power plant e g galdoz et al and other papers readership scientists and researchers in artificial intelligence neural networks fuzzy logic robotics software engineering nuclear engineering industrial chemistry nuclear physics mathematical physics and applied mathematics keywords

Short-term Load Forecasting for Industrial and Residential Consumers

2016

the application of glass as a structural material may seem surprising initially yet pioneering glass structures were first built two decades ago already ever since structural glass has been developing at a very high pace thanks to very intensive scientific and industrial research and new technological developments right at the heart of these rapidly evolving developments the european cost action tu0905 structural glass novel design methods and next generation products is active with its main goals of unifying harmonizing and boosting the ongoing developments in structural glass research cost action tu0905 frequently organizes international expert meetings and training schools and supports scientific research missions this proceedings volume of the cost action tu0905 mid term conference on structural glass offers a great insight into the latest developments in structural glass by means of more than 60 peer reviewed papers by nearly 140 authors contributions cover all major topics in the field ranging from in depth material investigations to full glass structures and facades as such it represents an appealing work on this very young and dynamic field and is intended for a global readership of researchers and practitioners including structural and civil engineers architects material scientists building consultants contractors material suppliers and product manufacturers as well as other professionals involved in the design and realization of structural glass projects the cost action tu0905 mid term conference was held as a unique event strongly embedded in cost action tu0905 structural glass novel design methods and next generation products as such it reflects the action s strong position as probably the largest structural glass research network worldwide and disseminates the ultimate cost philosophy true cooperation in science and technology

Machine Learning for Load Profile Data Analytics and Short-term Load Forecasting

2019

the book presents selected papers from the 18th international conference on intelligent information hiding and multimedia signal processing held on december 16 18 2022 in kitakyushu japan it is divided into two volumes and discusses latest research outcomes in the field of information technology it including but not limited to information hiding multimedia signal processing big data data mining bioinformatics database industrial and internet of things and their applications

Electric Load Forecasting Using an Artificial Neural Networks

2014-03

unifying electrical engineering and electronics engineering is based on the proceedings of the 2012 international conference on electrical and electronics engineering icee 2012 this book collects the peer reviewed papers presented at the conference the aim of the conference is to unify the two areas of electrical and electronics engineering the book examines trends and techniques in the field as well as theories and applications the editors have chosen to include the following topics biotechnology power engineering superconductivity circuits antennas technology system architectures and telecommunication

Advances in Electric Power and Energy Systems

2017-07-12

the book will focus on the applications of machine learning for sustainable development machine learning ml is an emerging technique whose diffusion and adoption in various sectors such as energy agriculture internet of things infrastructure will be of enormous benefit the state of the art of machine learning models is most useful for forecasting and prediction of various sectors for sustainable development

Artificial Intelligence and Soft Computing, Part I

2010-06

ヒューゴー賞 ネビュラ賞 ローカス賞 英国ＳＦ協会賞受賞 時空の覇権を争う二大勢力 エージェンシー と ガーデン の工作員レッドとブルーは 幾多の時間線での戦いを経てお互いを意識し 秘密裏に文通する関係になるが 超絶技巧の時空横断ＳＦ

Long-Term Electric Load Demand Forecasting and Modeling

2015-01-06

this second edition explores some of the latest techniques used to provide forecasts for a wide range of water related applications in areas such as floods droughts water resources and environmental impacts the practical uses can range from decisions on whether to issue a flood warning through to providing longer term advice such as on when to plant and harvest crops or how to operate reservoirs for water supply and hydropower schemes it provides an introduction to the topic for practitioners and researchers and useful background for courses in areas such as civil engineering water resources meteorology and hydrology as in the first edition the first section considers topics such as monitoring and forecasting techniques demand forecasting and how forecasts are interpreted when issuing warnings or advice separate chapters are now included for meteorological and catchment monitoring techniques allowing a more in depth discussion of topics such as weather radar and water quality observations the chapters on meteorological and hydrological forecasting now include a greater emphasis on rainfall forecasting and ensemble and probabilistic techniques regarding the interpretation of forecasts an updated chapter discusses topics such as approaches to issuing warnings and the use of decision support systems and risk based techniques given the rapid pace of development in flash flood fore casting techniques flash floods and slower responding riverine floods are now considered in separate chapters this includes more detail on forecasting floods in large river basins and on methods for providing early warnings of debris flows surface water flooding and ice jam and dam break floods later chapters now include more information on developing areas such as

environmental modelling and seasonal flow forecasting as before examples of operational systems are provided throughout and the extensive sets of references which were a feature of the first edition have been revised and updated key themes floods droughts meteorological observations catchment monitoring meteorological forecasts hydrological forecasts demand forecasts reservoirs water resources water quality decision support data assimilation probabilistic forecasts kevin sene is a civil engineer and researcher with wide experience in flood risk management water resources and hydrometeorology he has previously published books on flood warning forecasting and emergency response and flash floods springer 2008 2013

Power System Very Short-term Load Prediction

1997

this book presents original contributions on the theories and practices of emerging internet data and technologies and their applications in businesses engineering and academia as a key feature it addresses advances in the life cycle exploitation of data generated by digital ecosystem technologies the internet has become the most proliferative platform for emerging large scale computing paradigms among these data and technologies are two of the most prominent paradigms manifesting in a variety of forms such as data centers cloud computing mobile cloud mobile services and so on these technologies altogether create a digital ecosystem whose cornerstone is the data cycle from capturing to processing analysis and visualization the need to investigate various research and development issues in this digital ecosystem has been made even more pressing by the ever increasing demands of real life applications which are based on storing and processing large amounts of data given its scope the book offers a valuable asset for all researchers software developers practitioners and students interested in the field of data and technologies

Applications and Science in Soft Computing

2004-01-22

electric power systems worldwide face radical transformation with the need to decarbonise electricity supply replace ageing assets and harness new information and communication technologies ict the smart grid uses advanced ict to control next generation power systems reliably and efficiently this authoritative guide demonstrates the importance of the smart grid and shows how ict will extend beyond transmission voltages to distribution networks and customer level operation through smart meters and smart homes smart grid technology and applications clearly unravels the evolving smart grid concept with extensive illustrations and practical examples describes the spectrum of key enabling technologies required for the realisation of the smart grid with worked examples to illustrate the applications enables readers to engage with the immediate development of the power system and take part in the debate over the future smart grid introduces the constituent topics from first principles assuming only a basic knowledge of mathematics circuits and power systems brings together the expertise of a highly experienced and international author team from the uk sri lanka china and japan electrical electronics and computer engineering researchers practitioners and consultants working in inter disciplinary smart grid rd d will significantly enhance their knowledge through this reference the tutorial style will greatly benefit final year undergraduate and master s students as the curriculum increasing focuses on the breadth of technologies that contribute to smart grid realisation

Fuzzy System Applications for Short-term Electric Load Forecasting

2001

electric electronic and control engineering contains the contributions presented at the 2015 international conference on electric electronic and control engineering iceece 2015 phuket island thailand 5 6 march 2015 the book is divided into four main topics electric and electronic engineering mechanic and control engineering informati

Forecasting and Assessing Risk of Individual Electricity Peaks

2019-09-25

Data-Intensive Computing in Smart Microgrids

2021-09-06

Intelligent Systems and Soft Computing for Nuclear Science and Industry

1996-07-29

The Application of Artificial Neural Networks to Short Term Electrical Load Forecasting and Other Engineering Problems

1994

Proceedings of the National Seminar on Applied Systems Engineering and Soft Computing

2000

COST Action TU0905 Mid-term Conference on Structural Glass

2013-04-05

Advances in Intelligent Information Hiding and Multimedia Signal Processing

2023-05-23

Unifying Electrical Engineering and Electronics Engineering

2013-08-24

Machine Learning for Sustainable Development

2021-07-19

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2021-06-16

Hydrometeorology

2015-12-09

Advances in Internet, Data and Web Technologies

2019-02-05

Smart Grid

2012-02-23

Electric, Electronic and Control Engineering

2015-07-03

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