Analysis And Damping Control Of Low Frequency Power Systems Oscillations Linear Methods Power Electronics And Power Systems

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Scientific and Technical Aerospace Reports - 1994

Flexible Ac Transmission Systems (FACTS) - Yong-Hua Song 1999
Provides a comprehensive guide to FACTS, covering all the major aspects in research and development of FACTS technology.
Intelligent Operation and Control in Next Generation Urban Power Grid - Ke-Jun Li 2022-10-21

Mechatronics Engineering and Electrical Engineering - Ai Sheng 2015-04-28
The 2014 International Conference on Mechatronics Engineering and Electrical Engineering (CMEEE2014) was held October 18-19, 2014 in Sanya, Hainan, China. CMEEE2014 provided a valuable opportunity for researchers, scholars and scientists to exchange their new ideas and application experiences face to face together, to establish business or research
Small Signal Stability in Power Systems - Ahmed Abdulqader 2015-08-03
Synchronous generator stability is an essential issue in the studies of dynamic performance of electric power systems. One important category of stability analysis is the low-frequency oscillations of machine rotor due to disturbances to which the power system is susceptible. These oscillations may sustain and grow in magnitude to cause machine separation if adequate damping is not provided. To enhance system damping, the generating unit is equipped with a power system stabilizer (PSS). Conventional PSS's are widely utilized to damp the low-frequency inertial oscillations. The design of such stabilizers involves finding the set of PSS parameters which yield the best achievable damping response. Several design approaches were proposed over the years and some of them are given in the literature review of this study. A novel genetic-algorithm based optimization approach to design a robust PSS is presented in this study. The proposed approach employs optimization of damping to obtain minimum speed deviation and best possible time-domain transient performance. The single machine infinite bus system is used in this work. Simulations of the linearized system in addition to a simpower model based on the SimPowerSystems(r) are presented. The machine speed response has been investigated for both models in the case of Classic-PSS and GA-PSS designs. Their results are compared at different operating conditions, and the comparison shows that the proposed method gives encouraging results against classic method based on system response while being subjected to disturbances which mean that the system maintains its stability during (20 %) of perturbations in the load or the system is robustly stable."
Innovations and Developments of Swarm Intelligence Applications - Shi, Yuhui 2012-05-31
The natural social behavior of large groups of animals, such as flocks of birds, schools of fish, or colonies of ants has fascinated scientists for hundreds of years, if not longer, due to the intricate nature of their interactions and their ability to move and work together seemingly effortlessly. Innovations and Developments of Swarm Intelligence Applications explores the emerging realm of swarm intelligence, which finds its basis in the natural social behavior of animals. The study and application of this swarm behavior has led scientists to a new world of research as ways are found to apply this behavior to independent intelligent agents, creating complex solutions for real world applications. Worldwide contributions have been seamlessly combined in this comprehensive reference, providing a wealth of new information for researchers, academicians, students, and engineers.
Small Signal Analysis of Integrated Power Systems - M. A. Pai 2016
This is an essential tool to discover possible low frequency oscillations which if undamped may lead to major power failures. This book covers various aspects of this phenomenon from modeling to techniques to control them. The book covers low frequency in the 1-3 Hz range as well as sub synchronous oscillations in the 10-50Hz range. Damping techniques for both types of oscillations are discussed as well as design of Power System stabilizers. Modeling and design of FACTS devices in included. Selective computation of Eigenvalue(s) in a large system is discussed. Wind power systems and its integration into the existing grid is discussed along with small signal analysis.
Dynamic Stability of Structures - George Herrmann 2014-06-28
Dynamic Stability of Structures covers the proceedings of an International Conference on Dynamic Stability of Structures, held in Northwestern University, Evanston, Illinois on October 18-20, 1965, jointly sponsored by the Air Force of Scientific Research and Northwestern University. The conference aims to delineate the various categories of dynamic stability phenomena. This book is organized into six sections encompassing 20 chapters that tackle general topics such as mathematical methods of analysis, physical phenomena, design applications in engineering, and reports of field research. The first two sections deal with the fundamentals, principles, and concept of dynamic stability, as well as an introduction to the use of computing machines as an aid in studying the motions of complicated dynamical systems. The succeeding two sections highlight the statistical aspects in the structural stability theory and certain problems of structural dynamic. These sections also look into the dynamic buckling of elastic structures and the buckling of long slender ships due to wave-induced whipping. The last two sections explore the stability and vibration problems of mechanical systems under harmonic excitation and the dynamic buckling under step loading. These sections also include discussions on the nonlinear dynamic response of shell-type structures and of a column under random loading, as well as Italian research in the field. Structural and mechanical engineers will find this book invaluable.
Power System Dynamics and Stability - Peter W. Sauer 2006

Paper Abstracts - 2005

Analytical Investigation of Acceleration Restrictiion in a Fighter Airplane with an Automatic Control System - James T. Matthews 1958
A theoretical analysis was made to investigate the performance and acceleration-restriction capabilities of a normal-acceleration command control system in a fighter airplane. Several combinations of pitching velocity and pitching acceleration were investigated as feedback quantities in combination with normal acceleration.
Design of Controllers Associated with Static VAR Compensators for Damping of Low Frequency Oscillations in a Power System - Ravi Bhushan Kashyap 1993

Proceedings of Damping '89 - 1989

Vibration Damping, Control, and Design - Clarence W. de Silva 2007-04-05
Reducing and controlling the level of vibration in a mechanical system leads to an improved work environment and product quality, reduced noise, more economical operation, and longer equipment life. Adequate design is essential for reducing vibrations, while damping and control methods help further reduce and manipulate vibrations when design strategies reach their limits. There are also useful types of vibration, which may require enhancement or control. Vibration Damping, Control,

and Design balances theoretical and application-oriented coverage to enable optimal vibration and noise suppression and control in nearly any system. Drawn from the immensely popular Vibration and Shock Handbook, each expertly crafted chapter of this book includes convenient summary windows, tables, graphs, and lists to provide ready access to the important concepts and results. Working systematically from general principles to specific applications, coverage spans from theory and experimental techniques in vibration damping to isolation, passive control, active control, and structural dynamic modification. The book also discusses specific issues in designing for and controlling vibrations and noise such as regenerative chatter in machine tools, fluid-induced vibration, hearing and psychological effects, instrumentation for monitoring, and statistical energy analysis. This carefully edited work strikes a balance between practical considerations, design issues, and experimental techniques. Complemented by design examples and case studies, Vibration Damping, Control, and Design builds a deep understanding of the concepts and demonstrates how to apply these principles to real systems.

Technology for Large Space Systems - 1986

Robust Power System Frequency Control - Hassan Bevrani 2014-06-18

This updated edition of the industry standard reference on power system frequency control provides practical, systematic and flexible algorithms for regulating load frequency, offering new solutions to the technical challenges introduced by the escalating role of distributed generation and renewable energy sources in smart electric grids. The author emphasizes the physical constraints and practical engineering issues related to frequency in a deregulated environment, while fostering a conceptual understanding of frequency regulation and robust control techniques. The resulting control strategies bridge the gap between advantageous robust controls and traditional power system design, and are supplemented by real-time simulations. The impacts of low inertia and damping effect on system frequency in the presence of increased distributed and renewable penetration are given particular consideration, as the bulk synchronous machines of conventional frequency control are rendered ineffective in emerging grid environments where distributed/variable units with little or no rotating mass become dominant. Frequency stability and control issues relevant to the exciting new field of microgrids are also undertaken in this new edition. As frequency control becomes increasingly significant in the design of ever-more complex power systems, this expert guide ensures engineers are prepared to deploy smart grids with optimal functionality.

Electrical and Electronic Devices, Circuits and Materials - Suman Lata Tripathi 2021-03-15

The increasing demand in home and industry for electronic devices has encouraged designers and researchers to investigate new devices and circuits using new materials that can perform several tasks efficiently with low IC (integrated circuit) area and low power consumption. Furthermore, the increasing demand for portable devices intensifies the search to design sensor elements, an efficient storage cell, and large-capacity memory elements. Electrical and Electronic Devices, Circuits and Materials: Design and Applications will assist the development of basic concepts and fundamentals behind devices, circuits, materials, and systems. This book will allow its readers to develop their understanding of new materials to improve device performance with even smaller dimensions and lower costs. Additionally, this book covers major challenges in MEMS (micro-electromechanical system)-based device and thin-film fabrication and characterization, including their applications in different fields such as sensors, actuators, and biomedical engineering. Key Features: Assists researchers working on devices and circuits to correlate their work with other requirements of advanced electronic systems. Offers guidance for application-oriented electrical and electronic device and circuit design for future energy-efficient systems. Encourages awareness of the international standards for electrical and electronic device and circuit design. Organized into 23 chapters, Electrical and Electronic Devices, Circuits and Materials: Design and Applications will create a foundation to generate new electrical and electronic devices and their applications. It will be of vital significance for students and researchers seeking to establish the key parameters for future work.

Analysis and Damping Control of Power System Low-frequency Oscillations - Haifeng Wang 2016-03-30

This book presents the research and development results on power systems oscillations in three categories of analytical methods. First is damping torque analysis which was proposed in 1960’s, further developed between 1980-1990, and widely used in industry. Second is modal analysis which developed between the 1980’s and 1990’s as the most powerful method. Finally the linearized equal-area criterion analysis that is proposed and developed recently. The book covers three main types of controllers: Power System Stabilizer (PSS), FACTS (Flexible AC Transmission Systems) stabilizer, and ESS (Energy Storage Systems) stabilizer. The book provides a systematic and detailed introduction on the subject as the reference for industry applications and academic research.

Particle Damping Technology Based Structural Control - Zheng Lu 2020-03-27

This book presents a systematic introduction to particle damping technologies, which can be used to effectively mitigate seismic-induced and wind-induced vibration in various structures. Further, it offers comprehensive information on the latest research advances, e.g. a refined simulation model based on the discrete element method and a simplified simulation model based on equivalent principles. It then intensively studies the vibration attenuation effects of particle dampers subjected to different dynamic loads; in this context, the book proposes a new damping mechanism and “global’’ measures that can be used to evaluate damping performance. Moreover, the book uses the shaking table test and wind tunnel test to verify the proposed simulation methods, and their satisfactory damping performance is confirmed. To facilitate the practical engineering application of this technology, optimization design guidelines for particle impact dampers are also provided. In closing, the book offers a preliminary exploration of semi-active particle damping technology, which holds great potential for extension to other applications in which the primary system is subjected to non-stationary excitations.

Environment, Energy and Sustainable Development - Wen-Pei Sung 2013-12-17

Environment, Energy and Sustainable Development brings together 242 peer-reviewed papers presented at the 2013 International Conference on Frontiers of Energy and Environment Engineering, held in Xiamen, China, November 28-29, 2013. The main objective of this proceedings set is to take the environment-energydevelopments discussion a step further. Volume 1 of the set is devoted to Energy, power and environmental engineering, and volume 2 to Control, information and applications. Environment, Energy and Sustainable Development is intended to serve as resource material for scientists working on related topics in many disciplines, including environmental science, management science, and energy science and policy analysis, as well as for industry professionals in the wide field of energy and environmental engineering.

Proceedings of PURPLE MOUNTAIN FORUM 2019-International Forum on Smart Grid Protection and Control - Yusheng Xue 2019-08-08

This book presents original, peer-reviewed research papers from the 4th Purple Mountain Forum –International Forum on Smart Grid Protection and Control (PMF2019-SGPC), held in Nanjing, China on August 17–18, 2019. Addressing the latest research hotspots in the power industry, such as renewable energy integration, flexible interconnection of large scale power grids, integrated energy system, and cyber physical power systems, the papers share the latest research findings and practical application examples of the new theories, methodologies and algorithms in these areas. As such book a valuable reference for researchers, engineers, and university students.

2018 International CET Conference on Control, Communication, and Computing (IC4). - 2018

Offshore Renewable Energy: Ocean Waves, Tides and Offshore Wind - Eugen Rusu 2019-02-11

This book is a printed edition of the Special Issue "Offshore Renewable Energy: Ocean Waves, Tides and Offshore Wind" that was published in Energies

Interconnected Power Systems - Yong Li 2015-12-23

This book reports on the latest findings in the application of the wide area measurement systems (WAMS) in the analysis and control of power systems. The book collects new research ideas and achievements including a delay-dependent robust design method, a wide area robust coordination strategy, a hybrid assessment and choice method for wide area signals, a free-weighting matrices method and its application, as well as the online identification methods for low-frequency oscillations. The main original research results of this book are a comprehensive summary of the authors’ latest six-year study. The book will be of interest to academic researchers, R&D engineers and graduate students in power systems who wish to learn the core principles, methods, algorithms, and applications of the WAMS.

Comparison of Matrix Pencil and Prony Analysis for Estimating Electromechanical Modes in Noisy Signals for Power System Applications - Lisa Lorena Grant 2011
"As modern power systems continue to grow and evolve, accurate system stability analysis and oscillation control become increasingly important to guarantee system security. Network instability due to power system oscillations caused by the natural modes of the system is becoming a common occurrence. Modal analysis techniques can estimate the eigenvalues of large nonlinear systems from their dynamics responses. The extracted modal information can be applied to detect low frequency oscillations and assess stability margins for power system monitoring and preventive control. Modal information is also useful for low-frequency oscillation damping controller design. This thesis examines two techniques for modal identification based on their ability to accurately identify system modes in the presence of noisy signals and their potential for application to power system modal analysis. The methods investigated include Prony analysis, which has commonly been used in power system studies, and the Matrix Pencil method, which is more common in electromagnetics analysis. These two modal extraction techniques are often described as curve-fitting algorithms which can estimate the magnitude, frequency, phase, and damping parameters of a time-varying function from the eigenvalues of a system. Detailed descriptions of the procedures for performing both methods are included in this thesis to provide a comprehensive resource for implementing either technique in power system modal extraction applications. Simulations are presented using MATLAB for multiple case studies on signals with and without noise where noise is produced using a Gaussian random walk. Prony analysis has been shown to have difficulties extracting the modes of noisy signals, so the examples presented explore these shortcomings and compare them to the capabilities of the Matrix Pencil method. The advantages and disadvantages of both methods are discussed based on the MATLAB simulation results"--Abstract, leaf iii.
Electrical Engineering and Control - Min Zhu 2011-06-21
This volume includes extended and revised versions of a set of selected papers from the International Conference on Electric and Electronics (EEIC 2011) , held on June 20-22 , 2011, which is jointly organized by Nanchang University, Springer, and IEEE IAS Nanchang Chapter. The objective of EEIC 2011 Volume 2 is to provide a major interdisciplinary forum for the presentation of new approaches from Electrical engineering and controls, to foster integration of the latest developments in scientific research. 133 related topic papers were selected into this volume. All the papers were reviewed by 2 program committee members and selected by the volume editor Prof. Min Zhu. We hope every participant can have a good opportunity to exchange their research ideas and results and to discuss the state of the art in the areas of the Electrical engineering and controls.
Small-Signal Stability Analysis of Power Systems Integrated with Variable Speed Wind Generators - Wenjuan Du 2018-09-03
This book reviews and examines how power system low-frequency power oscillations and sub-synchronous oscillations may be affected by grid connection of wind power generation. Grid connection of wind power generation affects the power system small-signal stability and has been one of the most actively pursued research subjects in power systems and power electronics engineering in the last ten years. This book is the first of its kind to cover the impact of wind power generation on power system low-frequency oscillations and sub-synchronous oscillations. It begins with a comprehensive overview of the subject and progresses to modeling of power systems and introduces the application of conventional methods, including damping torque analysis, modal analysis and frequency-domain analysis, presented with detailed examples, making it useful for researchers and engineers worldwide.
Virtual Inertia Synthesis and Control - Thongchart Kerdphol 2020-11-28
This book provides a thorough understanding of the basic principles, synthesis, analysis, and control of virtual inertia systems. It uses the latest technical tools to mitigate power system stability and control problems under the presence of high distributed generators (DGs) and renewable energy sources (RESs) penetration. This book uses a simple virtual inertia control structure based on the frequency response model, complemented with various control methods and algorithms to achieve an adaptive virtual inertia control respect to the frequency stability and control issues. The chapters capture the important aspects in virtual inertia synthesis and control with the objective of solving the stability and control problems regarding the changes of system inertia caused by the integration of DGs/RESs. Different topics on the synthesis and application of virtual inertia are thoroughly covered with the description and analysis of numerous conventional and modern control methods for enhancing the full spectrum of power system stability and control. Filled with illustrative examples, this book gives the necessary fundamentals and insight into practical aspects. This book stimulates further research and offers practical solutions to real-world power system stability and control problems with respect to the system inertia variation triggered by the integration of RESs/DGs. It will be of use to engineers, academic researchers, and university students interested in power systems dynamics, analysis, stability and control.
Power System Oscillations - Graham Rogers 2012-12-06
Power System Oscillations deals with the analysis and control of low frequency oscillations in the 0.2-3 Hz range, which are a characteristic of interconnected power systems. Small variations in system load excite the oscillations, which must be damped effectively to maintain secure and stable system operation. No warning is given for the occurrence of growing oscillations caused by oscillatory instability, since a change in the system's operating condition may cause the transition from stable to unstable. If not limited by nonlinearities, unstable oscillations may lead to rapid system collapse. Thus, it is difficult for operators to intervene manually to restore the system's stability. It follows that it is important to analyze a system's oscillatory behavior in order to understand the system's limits. If the limits imposed by oscillatory instability are too low, they may be increased by the installation of special stabilizing controls. Since the late 60s when this phenomena was first observed in North American systems, intensive research has resulted in design and installation of stabilizing controls known as power system stabilizers (PSS). The design, location and tuning of PSS require special analytical tools. This book addresses these questions in a modal analysis framework, with transient simulation as a measure of controlled system performance. After discussing the nature of the oscillations, the design of the PSS is discussed extensively using modal analysis and frequency response. In the scenario of the restructured power system, the performance of power system damping controls must be insensitive to parameter uncertainties. Power system stabilizers, when well tuned, are shown to be robust using the techniques of modern control theory. The design of damping controls, which operate through electronic power system devices (FACTS), is also discussed. There are many worked examples throughout the text. The Power System Toolbox© for use with MATLAB® is used to perform all of the analyses used in this book. The text is based on the author's experience of over 40 years as an engineer in the power industry and as an educator.
The Shock and Vibration Bulletin - 1985

Auditory Display - Sølvi Ystad 2010-05-09
This book constitutes the thoroughly refereed post-conference proceedings of the 6th International Symposium on Computer Music Modeling and Retrieval, CMMR 2009, held in Copenhagen, Denmark, in May 2009. The 25 revised full papers presented were specially reviewed and corrected for this proceedings volume. The conference's topics include auditory exploration of data via sonification and audification; real time monitoring of multivariate date; sound in immersive interfaces and teleoperation; perceptual issues in auditory display; sound in generalized computer interfaces; technologies supporting auditory display creation; data handling for auditory display systems; applications of auditory display.
Robust Control in Power Systems - Bikash Pal 2006-07-02
Robust Control in Power Systems deals with the applications of new techniques in linear system theory to control low frequency oscillations in power systems. The book specifically focuses on the analysis and damping of inter-area oscillations in the systems which are in the range of 0.2-1 Hz. The damping control action is injected through high power electronic devices known as flexible AC transmission system (FACTS) controllers. Three commonly used FACTS controllers: controllable series capacitors (CSCs) controllable phase shifters (CPSs) and static var compensators (SVCs) have been used in this book to control the inter-area oscillations. The overview of linear system theory from the perspective of power system control is explained through examples. The damping control design is formulated as norm optimization problem. The H_infinity, H2 norm of properly defined transfer functions are minimized in linear matrix inequalities (LMI) framework to obtain desired performance and stability robustness. Both centralized and decentralized control structures are used. Usually the transmission of feedback signal from a remote location encounters delays making it difficult to control the system. Smith predictor based approach has been successfully explored in this book as a solution to such a problem. Robust Control in Power Systems will be valuable to academicians in the areas of power, control and system

theory, as well as professionals in the power industry.

Computer, Intelligent Computing and Education Technology - Hsiang-Chuan Liu 2014-03-26

This proceedings set contains selected Computer, Information and Education Technology related papers from the 2014 International Conference on Computer, Intelligent Computing and Education Technology (CICET 2014), held March 27-28, 2014 in Hong Kong. The proceedings aims to provide a platform for researchers, engineers and academics as well as indu

Controller Design for PSS and FACTS Devices to Enhance Damping of Low-frequency Power Oscillations in Power Systems - Ruhua You 2006

Low frequency electromechanical oscillations are inevitable characteristics of power systems and they greatly affect the transmission line transfer capability and power system stability. PSS and FACTS devices can help the damping of power system oscillations. The objective of this dissertation is to design an advanced PSS and propose a systematic approach for damping controller design for FACTS devices. Intelligent control strategy which combines the knowledge of system identification, fuzzy logic control, and the neural networks are applied to the PSS design. A fuzzy logic based PSS is developed and tuned by neural network strategy. The proposed PSS improved the damping of power system oscillations over a conventional PSS. But the same control strategy is not satisfactory for the FACTS damping controller design, mainly because of the different location and role of FACTS devices in power system oscillations compared to PSS. A systematic approach is proposed to design damping controllers for FACTS devices. The problem is considered from a control point of view and treated as a feedback control problem. A low order plant transfer function is obtained by PRONY method; proper control input is selected and a damping controller is designed combining the eigenvalue sensitivity analysis and the root locus method. A gain varying strategy is proposed to change the controller gain according to the transmission line loading condition for better damping effect. This approach is successfully applied in damping controller design for SVC, TCSC, and UPFC. Simulation results demonstrate good damping effects of these controllers Another work accomplished in this dissertation is the modeling of UPFC, a voltage-sourced converter-based FACTS device who simultaneously control bus voltage and power flows on transmission lines. The UPFC brings quite a few challenges to power system simulation and study including power flow calculations, modeling of converter control and UPFC dynamics, interfacing UPFC with the power system for transient simulation program development and physical and operating constraint modeling. The proposed model accurately represented the behavior of UPFC in quasi-steady state and well demonstrated the unique capability of the UPFC to control both the load flow and the bus voltage rapidly and independently.

Advanced Control Engineering Methods in Electrical Engineering Systems - Mohammed Chadli 2018-09-10

This book presents the proceedings of the Third International Conference on Electrical Engineering and Control (ICEECA2017). It covers new control system models and troubleshooting tips, and also addresses complex system requirements, such as increased speed, precision and remote capabilities, bridging the gap between the complex, math-heavy controls theory taught in formal courses, and the efficient implementation required in real-world industry settings. Further, it considers both the engineering aspects of signal processing and the practical issues in the broad field of information transmission and novel technologies for communication networks and modern antenna design. This book is intended for researchers, engineers, and advanced postgraduate students in control and electrical engineering, computer science, signal processing, as well as mechanical and chemical engineering.

Robust Control in Power Systems - Bikash Pal 2005-06-21

Robust Control in Power Systems deals with the applications of new techniques in linear system theory to control low frequency oscillations in power systems. The book specifically focuses on the analysis and damping of inter-area oscillations in the systems which are in the range of 0.2-1 Hz. The damping control action is injected through high power electronic devices known as flexible AC transmission system (FACTS) controllers. Three commonly used FACTS controllers: controllable series capacitors (CSCs) controllable phase shifters (CPSs) and static var compensators (SVCs) have been used in this book to control the inter-area oscillations. The overview of linear system theory from the perspective of power system control is explained through examples. The damping control design is formulated as norm optimization problem. The H_infinity, H2 norm of properly defined transfer functions are minimized in linear matrix inequalities (LMI) framework to obtain desired performance and stability robustness. Both centralized and decentralized control structures are used. Usually the transmission of feedback signal from a remote location encounters delays making it difficult to control the system. Smith predictor based approach has been successfully explored in this book as a solution to such a problem. Robust Control in Power Systems will be valuable to academicians in the areas of power, control and system theory, as well as professionals in the power industry.

Dynamic Systems - American Society of Mechanical Engineers. Winter Meeting 1985

An Analysis of a Nonlinear Instability in the Implementation of a VTOL Control System - 1982

Small-signal stability, control and dynamic performance of power systems - M.J Gibbard 2015-07-15

A thorough and exhaustive presentation of theoretical analysis and practical techniques for the small-signal analysis and control of large modern electric power systems as well as an assessment of their stability and damping performance.

Industrial Engineering, Machine Design And Automation (Iemda 2014) - Proceedings Of The 2014 Congress & Computer Science And Application (Ccsa 2014) - Proceedings Of The 2nd Congress - Shihong Qin 2015-03-30

This proceedings put together 68 selected articles from the joint conferences of 2014 Congress on Industrial Engineering, Machine Design and Automation (IEMDA2014) and the 2nd Congress on Computer Science and Application (CCSA2014), held in Sanya, China during December 12 - 14, 2014. The conference program of IEMDA 2014 focused on areas of Industrial Engineering, Machine Design and Automation, while the CCSA 2014 program provided the platform for Computer Science and Applications.Collected together the latest research results and applications on industrial engineering, machine design, automation, and computer science and other related Engineering topics. All submitted papers to this proceedings were subjected to strict peer-reviewing by 2-4 expert referees, to ensure that all articles selected are of highest standard and are relevance to the conference.