

Labview Data Acquisition And Analysis For The Movement Sciences

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LabVIEW Andrew L. McDonough 2001 A one of a kind book that connects the LabVIEW programming language with data acquisition and analysis. The hands-on approach includes ample practice exercises and provides a practical and direct way to learn, write and use programs for the purpose of collecting and analyzing human performance data. KEY TOPICS: Includes CD-ROM disk containing ready-to-use virtual instruments. The manual shows users how to build and run basic and more advanced computer programs within the flexible graphical framework of LabVIEW. For anyone interested in applying LabVIEW programming language to the movement sciences.

Data Acquisition Techniques Using PCs Howard Austerlitz 2002-12-04 The second edition of this highly successful text focuses on the major changes that have taken place in this field in recent times. Data Acquisition Techniques Using PCs, Second Edition, recognises that data acquisition is the core of most engineering and many life science systems in measurement and instrumentation. It will prove invaluable to scientists, engineers, students and technicians wishing to keep up with the latest technological developments. Teaches the reader how to set up a PC-based system that measures, analyzes, and controls experiments and processes through detailed design examples Geared for beginning and advanced users, with many tutorials for less experienced readers, and detailed standards references for more experienced readers Fully revised new edition discusses latest programming languages and includes a list of over 80 product manufacturers to save valuable time

A Flexible Labview{trademark}-based Data Acquisition and Analysis System for Scanning Microscopy 1998 A new data analysis system has been developed with computer-controlled beam and sample positioning, video sample imaging, multiple large solid angle detectors for x-rays and gamma-rays, and surface barrier detectors for charged particles. The system uses the LabVIEW{trademark} programming language allowing it to be easily ported between different computer operating systems. In the present configuration, digital signal processors are directly interfaced to a SCSI CAMAC controller. However, the modular software design permits the substitution of other hardware with LabVIEW-supported drivers. On-line displays of histogram and two-dimensional elemental map images provide a user-friendly data acquisition interface. Subregions of the two-dimensional maps may be selected interactively for detailed analysis or for subsequent scanning. Off-line data processing of archived data currently yields elemental maps, analyzed spectra and reconstructions of tomographic data.

Principles of Instrumental Analysis Douglas A. Skoog 2017-01-27 PRINCIPLES OF INSTRUMENTAL ANALYSIS is the standard for courses on the principles and applications of modern analytical instruments. In the 7th edition, authors Skoog, Holler, and Crouch infuse their popular text with updated techniques and several new Instrumental Analysis in Action case studies. Updated material enhances the book's proven approach, which places an emphasis on the fundamental principles of operation for each type of instrument, its optimal area of application, its sensitivity, its precision, and its limitations. The text also introduces students to elementary analog and digital electronics, computers, and the treatment of analytical data. Important Notice: Media content referenced within the product description or the product text may not be available in the ebook version.

ENERGY, ENVIRONMENTAL and SUSTAINABLE ECOSYSTEM DEVELOPMENT - INTERNATIONAL CONFERENCE on ENERGY, ENVIRONMENTAL and SUSTAINABLE ECOSYSTEM DEVELOPMENT (EESD 2015) Jamal KHATIB 2015-12-02

Real-Time Data Acquisition in Human Physiology Dipali Bansal 2021-06-15 Real-Time Data Acquisition in Human Physiology: Real-Time Acquisition, Processing, and Interpretation—A MATLAB-Based Approach focuses on the design and development of a computer-based system to detect and digitally process human ECG, EMG, and carotid pulse waveforms in real time. The indigenous system developed and described in this book allows for an easy-to-interface, simple hardware arrangement for bio-signal detection. The computational functionality of MATLAB is verified for viewing, digital filtration, and feature extraction of acquired bio-signals. This book demonstrates a method of providing a relatively cost-effective solution to human physiology real-time monitoring, processing, and interpretation that is more realizable and would directly benefit a larger population of patients. Presents an application-driven, interdisciplinary, and experimental approach to bio-signal processing with a focus on acquiring, processing, and understanding human ECG, EMG, carotid pulse data and HRV. Covers instrumentation and digital signal processing techniques useful for detecting and interpreting human physiology in real time, including experimental layout and methodology in an easy-to-understand manner. Discusses development of a computer-based system that is capable of direct interface through the sound port of a PC and does not require proprietary DAQ units and ADC units. Covers a MATLAB-based algorithm for online noise reduction, features extraction techniques, and infers diagnostic features in real time. Provides proof of concept of a PC-based twin channel acquisition system for the recognition of multiple physiological parameters. Establishes the use of Digital Signal Controller to enhance features of acquired human physiology. Presents the use of carotid pulse waveforms for HRV analysis in critical situations using a very simple hardware/software arrangement.

Design of an Intelligent Embedded System for Condition Monitoring of an Industrial Robot Alaa Abdulhady Jaber 2016-09-08 This thesis introduces a successfully designed and commissioned intelligent health monitoring system, specifically for use on any industrial robot, which is able to predict the onset of faults in the joints of the geared transmissions. However the developed embedded wireless condition monitoring system leads itself very well for applications on any power transmission equipment in which the loads and speeds are not constant, and access is restricted. As such this provides significant scope for future development. Three significant achievements are presented in this thesis. First, the development of a condition monitoring algorithm based on vibration analysis of an industrial robot for fault detection and diagnosis. The combined use of a statistical control chart with time-domain signal analysis for detecting a fault via an arm-mounted wireless processor system represents the first stage of fault detection. Second, the design and development of a sophisticated embedded microprocessor base station for online implementation of the intelligent condition monitoring algorithm, and third, the implementation of a discrete wavelet transform, using an artificial neural network, with statistical feature extraction for robot fault diagnosis in which the vibration signals are first decomposed into eight levels of wavelet coefficients.

Mechatronics and Intelligent Materials II Ran Chen 2012-03-15 Volume is indexed by Thomson Reuters CPCI-S (WoS). This work comprises 798 peer-reviewed papers on Mechatronics and Intelligent Materials, and seeks to promote the development of those topics by strengthening international academic cooperation and communication via the exchange of research ideas. It will provide readers with a broad overview of the latest advances made in the fields of mechatronics and intelligent materials.

Energy, Environmental & Sustainable Ecosystem Development Jamal Khatib 2015-12-02 ' In the rapid development of global economics, energy, environmental & ecosystem are recognized as important factors for sustainable development in human society. The application of measurement and control technology also play a very important role in the utilization and protection of energy and the environment. 2015 International Conference on Energy, Environmental & Sustainable Ecosystem Development (EESD 2015) is a multidisciplinary international conference that provides a platform for scientists, engineers and researchers worldwide to share their ideas and present solutions to energy, environmental & sustainable ecosystem development issues. Contents:Energy Science and TechnologyEnvironmental Science and EngineeringRenewable Energy and Sustainable DevelopmentEnergy, Environmental & Sustainable Ecological DevelopmentInfrastructure, Management and Environment Readership: Researchers, academics, professionals and graduate students in environmental science. Keywords:Energy Science and Technology;Environmental Science and Engineering;Renewable Energy and Sustainable Development;Energy;Environmental " Sustainable Ecological Development'

LabVIEW Jeffrey Y. Beyon 2001 Master LabVIEW programming -- hands-on! Learn through real-world data acquisition and analysis applications Dozens of key techniques presented through easy-to-adapt templates Extensively classroom-tested with professional engineers CD-ROM: Tools, templates, and complete LabVIEW evaluation version Master LabVIEW programming from the ground up -- fast! "LabVIEW Programming, Data Acquisition and Analysis" is your easy, hands-on guide to LabVIEW programming and data analysis. Whether you're learning LabVIEW from the ground up, or updating knowledge you already have, Jeffrey Beyon covers

every key technique you need to build reliable, high-performance applications. You'll start with the basics: the structure of LabVIEW source files; using sub VIs; loops and conditional statements; data display; data types; and the prerequisites for data acquisition, including sampling theorems and data acquisition VIs. Next, Beyon covers every key category of data acquisition and analysis application -- analog and digital, input and output. Coverage includes: Practical techniques for data save/read, data conversion, and much more Tips and tricks for memory management, large file management, and more Implementing each leading data analysis VI Instrument control, counters, and more Avoiding and troubleshooting common LabVIEW programming problems Most examples are presented in the form of software templates that are easy enough to understand quickly, and robust enough to serve as building blocks for real-world solutions. You'll find detailed, end-of-chapter review questions; an accompanying lab workbook is also available. Whether you're a field engineer, scientist, researcher, or student, there's no faster way to get results with LabVIEW! CD-ROM INCLUDES: Complete library of LabVIEW tools and templates Full LabVIEW evaluation version Companion lab workbook: "Hands-On Exercise Manual for LabVIEW Programming, Data Acquisition and Analysis"

Upgrade of a LabVIEW Based Data Acquisition System for Wind Tunnel Test of a 1/10 Scale OH-6A Helicopter Fuselage Philipp A. Lines 2003-06-01 For over half a century the NPS Aerolab Low Speed Wind Tunnel located in Halligan Hall of the Naval Postgraduate school has served to provide students and facility with meaningful aerodynamic data for research and problem analysis. New data acquisition hardware was installed three years ago but never fully verified, and contained no integrated software program to collect data from the strain-gauge balance pedestal. Existing National Instruments based hardware for the NPS low-speed wind tunnel was reconfigured to obtain data from the strain-gauge pedestal. Additionally, a data acquisition software program was written in LabVIEW(C) to accommodate the hardware. The Virtual Instruments (VI) program collects and plots accurate data from all four strain gauges in real-time, producing non-dimensional force and moment coefficients. A research study on the performance of an OH-6A helicopter fuselage was conducted. NPS Aerolab wind tunnel tests consisted of drag, lift, and pitching moment measurements of the OH-6A along yaw and angle-of attack sweeps. The results of the NPS wind tunnel data were compared against testing conducted on a full-scale OH-6A helicopter in NASA Ames' 40 ft. x 80ft. wind tunnel, along with the U.S. Army's Light Observation Helicopter (LOH) wind tunnel tests. Results of current testing substantiate the LabVIEW(C) code.

LabVIEW for Data Acquisition Bruce Mihura 2001-06-26 The practical, succinct LabVIEW data acquisition tutorial for every professional. No matter how much LabVIEW experience you have, this compact tutorial gives you core skills for producing virtually any data acquisition (DAQ) application-input and output. Designed for every engineer and scientist, LabVIEW for Data Acquisition begins with quick-start primers on both LabVIEW and DAQ, and builds your skills with extensive code examples and visual explanations drawn from Bruce Mihura's extensive experience teaching LabVIEW to professionals. Includes extensive coverage of DAQ-specific programming techniques Real-world techniques for maximizing accuracy and efficiency The 10 most common LabVIEW DAQ development problems-with specific solutions Addresses simulation, debugging, real-time issues, and network/distributed systems Preventing unauthorized changes to your LabVIEW code An overview of transducers for a wide variety of signals Non-NI alternatives for hardware and software LabVIEW for Data Acquisition includes an extensive collection of real-world LabVIEW applications, lists of LabVIEW tips and tricks, coverage of non-NI software and hardware alternatives, and much more. Whatever data acquisition application you need to create, this is the book to start and finish with. RELATED WEBSITE The accompanying website includes an evaluation version of LabVIEW and key LabVIEW code covered in the book.

LabView7Express Robert H. Bishop 2006 For courses in Measurement and Instrumentation, Electrical Engineering lab, and Physics and Chemistry lab. Includes New LABVIEW 7.1 Student Edition for Windows XP/2000/NT. National Instruments' LabVIEW is the defacto industry standard for test, measurement, and automation software solutions. The LabVIEW 7 Express Student Edition delivers the graphical programming capabilities of the LabVIEW professional version. With the Student Edition, students can design graphical programming solutions to their classroom problems and laboratory experiments. The Student Edition is compatible with all National Instruments data acquisition and instrument control hardware. Note: The LabVIEW Student Edition is available to students, faculty, and staff for personal educational use only. It is not intended for research, institutional, or commercial use. For more information about these licensing options, please visit the National Instruments website at (<http://www.ni.com/academic/>) *Electronic Measurements and Instrumentation* RS Sedha 2013 The book is meant for B.E./B.Tech. students of different universities of India and abroad. It contains all basic material required at undergraduate level. The author has included "Examination questions" from several Indian Universities as solved examples. The sections on "Descriptive Questions" and "Multiple Choice Questions" contains the theory type examination questions and objective questions respectively.

LabVIEW Ian Fairweather 2011-12-12 LabVIEW has become one of the preeminent platforms for the development of data acquisition and data analysis programs. LabVIEW : A Developer's Guide to Real World Integration explains how to integrate LabVIEW into real-life applications.Written by experienced LabVIEW developers and engineers, the book describes how LabVIEW has been pivotal in solv *Proceedings of the International Conference on Control and Information* 1995 Wong Wing Shing 1995-06-22 **Testing and Measurement: Techniques and Applications** Kennis Chan 2015-06-11 Testing and Measurement: Techniques and Applications is divided into 6 sections: Microwave, Ultrasonic and Acoustic Measurement and Application; Material Performance and Measuring and Testing Technique; Laser, Optics Fiber and Sensor; Industrial Autoimmunization and Measurement; Artificial Intelligence and Application; and Image, Signal and In

Learning with LabVIEW 7 Express Robert H. Bishop 2004

Soft Computing in Information Communication Technology Jia Luo 2012-06-30 This is a collection of the accepted papers concerning soft computing in information communication technology. All accepted papers are subjected to strict peer-reviewing by 2 expert referees. The resultant dissemination of the latest research results, and the exchanges of views concerning the future research directions to be taken in this field makes the work of immense value to all those having an interest in the topics covered. The present book represents a cooperative effort to seek out the best strategies for effecting improvements in the quality and the reliability of Neural Networks, Swarm Intelligence, Evolutionary Computing, Image Processing Internet Security, Data Security, Data Mining, Network Security and Protection of data and Cyber laws. Our sincere appreciation and thanks go to these authors for their contributions to this conference. I hope you can gain lots of useful information from the book.

Computer Engineering: Concepts, Methodologies, Tools and Applications Management Association, Information Resources 2011-12-31 "This reference is a broad, multi-volume collection of the best recent works published under the umbrella of computer engineering, including perspectives on the fundamental aspects, tools and technologies, methods and design, applications, managerial impact, social/behavioral perspectives, critical issues, and emerging trends in the field"--Provided by publisher. *Hands-on Introduction to LabVIEW for Scientists and Engineers* John Essick 2009 Hands-On Introduction to LabVIEW for Scientists and Engineers takes a "learn-by-doing" approach to acquiring the computer-based skills used in daily experimental work. Ideal as a course textbook or a self-study supplement, the text explores practical programming solutions for carrying out interesting and relevant projects. Readers--who are assumed to have no prior computer programming or LabVIEW background--will begin writing meaningful programs in the first few pages. Instructors adopting the book as a classroom text can easily choose the desired depth of coverage for their courses. The first four chapters focus on the fundamentals of LabVIEW programming and the basics of computer-based experimentation using a National Instruments data acquisition (DAQ) device; these chapters provide the instructional materials necessary for a three-week introduction to LabVIEW-based data acquisition. A full-featured course that uses most of the text's chapters will bring students to an intermediate skill level in computer-based data acquisition and analysis. Features *Flexible modular structure. The text's unique organization makes it suitable as either a short introduction to LabVIEW or a guide to more in-depth programming. *Easy-to-implement Express VIs enable introduction of

data acquisition in early chapters. *"Do It Yourself" projects at the end of each chapter. Each project poses an interesting "real-world" problem and loosely directs readers in applying the chapter's material to find a solution. *Homework problems at the end of each chapter. A wide selection of homework-style problems allows interested students to test their understanding and further develop their computer-based experimentation skills.

Data Acquisition Using Lab View to Measure the Force Transfers in the Flexors of a Human Hand Ravi K. Mylavarapu 2006 Data Acquisition and analysis from various hardware sources like sensors, transducers and gauges has never been simpler as it has become with the advent of National Instrument's Acquisition software Labview. Coupled with a wide array of hardware devices and software add-ons to choose from, data can be easily acquired, stored, processed and analyzed. In this Project, a computer based Data Acquisition System was implemented using Labview and Diadem. This system was designed and implemented to gather data from multiple displacement sensors and load cells attached to the fingertips of the human hands. The collected data was processed using Diadem for future analysis and determining the causes for a peculiar phenomenon in the human hands called the Focal Dystonia. An 8-channel Real time Data Acquisition system was set up that would gather data from the sensors and store it in a specified directory for future analysis. Computer based Data Acquisition has become extremely popular and is emerging as a standardized way of acquiring data from multiple resources, and this project stands as a testimony for the same.

Hands-on Exercise Manual for LabVIEW Programming, Data Acquisition and Analysis Jeffrey Y. Beyon 2001 Structured, focused practice for mastering LabVIEW programming fast! Master LabVIEW programming in six days, hands-on! Over 60 real-world problems and solutions Designed for easy learning and extensive real-world application Extensively classroom-tested with professional engineers Website: Tools, templates, solutions, and complete LabVIEW evaluation version The supplementary workbook to LabVIEW Programming, Data Acquisition, and Analysis, this book presents a series of real-world programming challenges designed to help professionals master LabVIEW development in six focused one-day learning sessions. Each session is organized into a series of short, 10 to 15 minute exercises, each with clear objectives and instructions designed to teach a single skill you can easily apply to your custom applications. Every skill is also mapped to the corresponding detailed explanations in LabVIEW Programming, Data Acquisition, and Analysis. Coverage includes: Installing LabVIEW and working with source files and subVIs Loops, conditional statements, and program flow Displaying data and working with data types Key categories of data acquisition and analysis applications Saving/reading data and file I/O Instrument control techniques Implementing leading data analysis VIs, and more The only way to truly master LabVIEW is to practice. This book gives you the structured, focused practice you need to achieve mastery fast. Whether you're a LabVIEW beginner or an experienced developer who want to update your skills, you'll find it an invaluable resource. WEBSITE INCLUDES: Complete library of LabVIEW tools and templates Solutions to every exercise in this workbook Full LabVIEW evaluation version

Information Technology and Computer Application Engineering Hsiang-Chuan Liu 2013-10-11 This proceedings volume brings together some 189 peer-reviewed papers presented at the International Conference on Information Technology and Computer Application Engineering, held 27-28 August 2013, in Hong Kong, China. Specific topics under consideration include Control, Robotics, and Automation, Information Technology, Intelligent Computing and Telecommunication, Computer Science and Engineering, Computer Education and Application and other related topics. This book provides readers a state-of-the-art survey of recent innovations and research worldwide in Information Technology and Computer Application Engineering, in so-doing furthering the development and growth of these research fields, strengthening international academic cooperation and communication, and promoting the fruitful exchange of research ideas. This volume will be of interest to professionals and academics alike, serving as a broad overview of the latest advances in the dynamic field of Information Technology and Computer Application Engineering.

NASA Tech Briefs 1994

Data Acquisition and Analysis for Semiconductor Laser Characterization Using LabVIEW Satoshi Ishikawa 1996

LabVIEW Signal Processing Mahesh L. Chugani 1998-06-03 Get results fast, with LabVIEW Signal Processing! This practical guide to LabVIEW Signal Processing and control system capabilities is designed to help you get results fast. You'll understand LabVIEW's extensive analysis capabilities and learn to identify and use the best LabVIEW tool for each application. You'll review classical DSP and other essential topics, including control system theory, curve fitting, and linear algebra. Along the way, you'll use LabVIEW's tools to construct practical applications that illuminate: Arbitrary waveform generation. Aliasing, signal separation, and their effects. The separation of two signals close in frequency but differing in amplitudes. Predicting the cost of producing a product in multiple quantities. Noise removal in biomedical applications. Determination of system stability and design linear state feedback. The accompanying website contains the complete LabVIEW FDS evaluation version, including analysis library, relevant elements of the G Math Toolkit, and complete demos of several other important products, including the Digital Filter Design Toolkit and the Signal Processing Suite. Whether you're a professional or student, LabVIEW represents an extraordinary opportunity to streamline signal processing and control systems projects--and this book is all you need to get started. *Intelligent Condition Based Monitoring* Nishchal K. Verma 2020-01-13 This book discusses condition based monitoring of rotating machines using intelligent adaptive systems. The book employs computational intelligence and fuzzy control principles to deliver a module that can adaptively monitor and optimize machine health and performance. This book covers design and performance of such systems and provides case studies and data models for fault detection and diagnosis. The contents cover everything from optimal sensor positioning to fault diagnosis. The principles laid out in this book can be applied across rotating machinery such as turbines, compressors, and aircraft engines. The adaptive fault diagnostics systems presented can be used in multiple time and safety critical applications in domains such as aerospace, automotive, deep earth and deep water exploration, and energy.

Handbook of Research on Synthesizing Human Emotion in Intelligent Systems and Robotics Vallverdú, Jordi 2014-11-30 Emotions convey significant information through means of natural language analysis, embodiment, and emotional signing. Machines equipped with the ability to experience and interpret emotions perform better in complex environments and share in the emotionally-rich social context. The Handbook of Research on Synthesizing Human Emotion in Intelligent Systems and Robotics presents a solid framework for taking human-robot interaction closer to its full potential. Presenting a close look at all the factors involved in modeling emotions and applying a thorough understanding of human emotional recognition to technology, this volume appeals to active researchers in the fields of artificial emotions, artificial intelligence, computing, robotics, philosophy, and psychology, as well as to students interested in the research of synthetic emotions.

Communcations and Information Processing Maotai Zhao 2012-06-28 The two volume set, CCIS 288 and 289, constitutes the thoroughly refereed post-conference proceedings of the First International Conference on Communications and Information Processing, ICCIP 2012, held in Aveiro, Portugal, in March 2012. The 168 revised full papers of both volumes were carefully reviewed and selected from numerous submissions. The papers present the state-of-the-art in communications and information processing and feature current research on the theory, analysis, design, test and deployment related to communications and information processing systems.

Computerized Data Acquisition and Analysis for the Cornell Field-reversed Ion Ring Experiment Feng Zhou 1996

Mechanics of Materials Laboratory Course Ghatu Zimmerman 2022-05-31 This book is designed to provide lecture notes (theory) and experimental design of major concepts typically taught in most Mechanics of Materials courses in a sophomore- or junior-level Mechanical or Civil Engineering curriculum. Several essential concepts that engineers encounter in practice, such as statistical data treatment, uncertainty analysis, and Monte Carlo simulations, are incorporated into the experiments where applicable, and will become integral to each laboratory assignment. Use of common strain (stress) measurement techniques, such as strain gages, are emphasized. Application of basic electrical circuits, such as Wheatstone bridge for strain measurement, and use of load cells, accelerometers, etc., are employed in experiments. Stress analysis under commonly applied loads such as axial loading (compression and tension), shear loading, flexural loading (cantilever and four-point bending), impact loading, adhesive strength, creep, etc., are covered. LabVIEW software with relevant data acquisition (DAQ) system is used for all experiments. Two final projects each spanning 2-3 weeks are included: (i) flexural loading with stress intensity factor determination and (ii) dynamic stress wave propagation in a slender rod and determination of the stress-strain curves at high strain rates. The book provides theoretical concepts that are pertinent to each laboratory experiment and prelab assignment that a student should complete to prepare for the laboratory. Instructions for securing off-the-shelf components to design each experiment and their assembly (with figures) are provided. Calibration procedure is emphasized whenever students assemble components or design experiments. Detailed instructions for conducting experiments and table format for data gathering are provided. Each lab assignment has a set of questions to be answered upon completion of experiment and data analysis. Lecture

notes provide detailed instructions on how to use LabVIEW software for data gathering during the experiment and conduct data analysis.

Data Acquisition Using LabVIEW Behzad Ehsani 2016-12-14 Transform physical phenomena into computer-acceptable data using a truly object-oriented language About This Book Create your own data acquisition system independently using LabVIEW and build interactive dashboards Collect data using National Instrument's and third-party, open source, affordable hardware Step-by-step real-world examples using various tools that illustrate the fundamentals of data acquisition Who This Book Is For If you are an engineer, scientist, experienced hobbyist, or student, you will highly benefit from the content and examples illustrated in this book. A working knowledge of precision testing, measurement instruments, and electronics, as well as a background in computer fundamentals and programming is expected. What You Will Learn Create a virtual instrument which highlights common functionality of LabVIEW Get familiarized with common buses such as Serial, GPIB, and SCPI commands Staircase signal acquisition using NI-DAQmx Discover how to measure light intensity and distance Master LabVIEW debugging techniques Build a data acquisition application complete with an installer and required drivers Utilize open source microcontroller Arduino and a 32-bit Arduino compatible Uno32 using LabVIEW programming environment In Detail NI LabVIEW's intuitive graphical interface eliminates the steep learning curve associated with text-based languages such as C or C++. LabVIEW is a proven and powerful integrated development environment to interact with measurement and control hardware, analyze data, publish results, and distribute systems. This hands-on tutorial guide helps you harness the power of LabVIEW for data acquisition. This book begins with a quick introduction to LabVIEW, running through the fundamentals of communication and data collection. Then get to grips with the auto-code generation feature of LabVIEW using its GUI interface. You will learn how to use NI-DAQmx Data acquisition VIs, showing how LabVIEW can be used to appropriate a true physical phenomenon (such as temperature, light, and so on) and convert it to an appropriate data type that can be manipulated and analyzed with a computer. You will also learn how to create Distribution Kit for LabVIEW, acquainting yourself with various debugging techniques offered by LabVIEW to help you in situations where bugs are not letting you run your programs as intended. By the end of the book, you will have a clear idea how to build your own data acquisition system independently and much more. Style and approach A hands-on practical guide that starts by laying down the software and hardware foundations necessary for subsequent data acquisition-intensive chapters. The book is packed full of specific examples with software screenshots and schematic diagrams to guide you through the creation of each virtual instrument.

Applied Mathematics, Modeling and Computer Simulation C.-H. Chen 2022-02-25 The pervasiveness of computers in every field of science, industry and everyday life has meant that applied mathematics, particularly in relation to modeling and simulation, has become ever more important in recent years. This book presents the proceedings of the 2021 International Conference on Applied Mathematics, Modeling and Computer Simulation (AMMCS 2021), hosted in Wuhan, China, and held as a virtual event from 13 to 14 November 2021. The aim of the conference is to foster the knowledge and understanding of recent advances across the broad fields of applied mathematics, modeling and computer simulation, and it provides an annual platform for scholars and researchers to communicate important recent developments in their areas of specialization to colleagues and other scientists in related disciplines. This year more than 150 participants were able to exchange knowledge and discuss recent developments via the conference. The book contains 115 peer-reviewed papers, selected from more than 250 submissions and ranging from the theoretical and conceptual to the strongly pragmatic and all addressing industrial best practice. Topics covered include mathematical modeling and applications, engineering applications and scientific computations, and the simulation of intelligent systems. Providing an overview of recent development and with a mix of practical experiences and enlightening ideas, the book will be of interest to researchers and practitioners everywhere. *Hands-On Introduction to LabVIEW for Scientists and Engineers* John Essick 2012-07-12 "Introduction to LabView programming for scientists and engineers"--*Data Acquisition and Measurement for High Voltage Analysis Using LabVIEW* Kuganesvaran U. Muniandy 2004

Mechanical Engineering and Control Systems Xiaolong Li 2016-01-15 This book consists of 113 selected papers presented at the 2015 International Conference on Mechanical Engineering and Control Systems (MECS2015), which was held in Wuhan, China during January 23-25, 2015. All accepted papers have been subjected to strict peer review by two to four expert referees, and selected based on originality, ability to test ideas and contribution to knowledge. MECS2015 focuses on eight main areas, namely, Mechanical Engineering, Automation, Computer Networks, Signal Processing, Pattern Recognition and Artificial Intelligence, Electrical Engineering, Material Engineering, and System Design. The conference provided an opportunity for researchers to exchange ideas and application experiences, and to establish business or research relations, finding global partners for future collaborations. The conference program was extremely rich, profound and featured high-impact presentations of selected papers and additional late-breaking contributions. Contents: Mechanical Engineering and Manufacturing Technologies Automation and Control Engineering Communication Networking and Computing Technologies Signal Processing and Image Processing Pattern Recognition and Artificial Intelligence Micro Electromechanical Systems Technology and Application Material Science and Material Engineering System Design and Simulation Sustainable City and Sustainable Development Readership: Researchers and graduate students interested in mechanical engineering and control systems. Key Features: It is one of the leading international conferences for presenting novel and fundamental advances in the fields of Mechanical Engineering and Control Systems The proceedings put together the most up-to-date, comprehensive and worldwide state-of-the-art knowledge in Mechanical Engineering and Control Systems Many of the articles are the output of research funded by Chinese research agencies, representing the state-of-the-art technologies in Chinese engineering R&D Keywords: Mechanical Engineering; Automation; Computer Networks; Signal Processing; Pattern Recognitions and Artificial Intelligence; Electrical Engineering; Material Engineering; System Design

A LabVIEW Based Wind Tunnel Data Acquisition System Michael R. Huff 1998-09-01 The NPS Aerolab Low Speed Wind Tunnel located in Halligan Hall of the Navy Postgraduate School has been in operation since 1953. Although the tunnel is well maintained, its data acquisition system has not kept pace with modern technology. An effective but affordable solution for acquiring data was needed. It was determined that a software package known as LabVIEW would provide a low cost, data acquisition solution that will enhance the capabilities of the wind tunnel, while at the same time making it more user friendly to faculty and students. The focus of this thesis is the design of a VI that will collect and plot force and moment data from a six component strain gauge balance and yield real time, non-dimensional, force and oment coefficients in six degrees of freedom. Wind tunnel tests consisting of angle-of-attack sweeps in the NPS aerolab low-speed wind tunnel were conducted to verify (i) D) optimized, M=6, conical-flow waverider data obtained in 1994 using a different data acquisition system. Results of current testing substantiate the LabVIEW code and the validity of the 1994 test data. Analysis of the current wind tunnel test data resolved pitching moment concerns related to the 1994 data.

Digital Data Acquisition for Laser Radar for Vibration Analysis Felix G. Montes 1998 Laser radar for vibration analysis represents a military application to develop a target identification system in the future. The problem addressed is how to analyze the vibrations of a target illuminated by the laser radar to achieve a positive identification. This thesis develops a computer-based data acquisition and analysis system for improving the laser radar capability. Specifically, a review is made of the CO2 laser radar, coherent detection, and data acquisition software and signal processing. These aspects form the basis for a laser radar system, using LabView software for data acquisition and signal analysis, which is capable of detecting vibrations from a stationary target. The laser radar was able to detect the frequencies of vibration of a test target. All the data can be recorded by the system. The laser radar presented could be used for further development and production of a target identification system.

Advanced Topics in LabWindows/CVI Shahid F. Khalid 2001-11-01 Take virtual instrumentation to the next level with high-level programming. High-level programming with LabWindows/CVI Live data display via Internet or intranet sources Programmatic creation and control of GUIs Data acquisition and VXI device communication Graph control, table control, function panels, instrument drivers, and Open GL Unleash the true power of LabWindows/CVI when you employ the rich features of this programming environment. In this follow-up to his LabWindows CVI Programming for Beginners, Shahid F. Khalid presents the sophisticated techniques that allow experienced users to make the most of this virtual instrumentation powerhouse. The flexibility of LabWindows/CVI software means that you can build virtual instrumentation using Microsoft Visual Basic and Visual C++ as well as ANSI C. Advanced Topics in LabWindows/CVI focuses on the use of C in an open software architecture. It is a project-oriented guide that will teach you to build applications using the more complex features of this programming environment. Applications include: Live data acquisition via Internet or intranet sources using Data Socket technology GUI controls created and manipulated in real time Advanced features of graph and table controls 3-D data plotting with Open GL Communications with VXI devices using VISA Creating and using function panels and instrument drivers The material is organized to present information with maximum clarity, keeping the reader in mind. For convenience, each chapter

concludes with an explanation of the purpose and prototype of the library functions under discussion.

Advanced Topics in LabWindows/CVI will give students and working professionals the tools to build and automate sophisticated virtual instrumentation for a world of applications.