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Optical Superresolution Zeev Zalevsky 2004 The authors explore the ways to improve the classical resolution limits of an imaging system, and provide novel approaches for achieving better results than would otherwise be possible with current imaging technology. The book begins by presenting the theoretical foundations, background information, and terminology of super resolution, and then discusses methods and systems used to achieve the super resolution effect. Various approaches to dealing with and exceeding the limitations of the lens aperture, the pixel size of the camera, and the noise generated at the detector are presented and analyzed. The last chapter illustrates several industry-related examples and potential applications to real industrial electro-optical systems. This book is intended for graduate students or researchers in academia or industry, and anyone else looking to improve the performance of their electro-optical system design.

Edexcel Gcse Maths: Gcse: Edexcel Gcse Maths Higher Student Book Marguerite Appleton 2015-02-28 Edexcel GCSE Maths, Higher Student Book has been created by experts to help deliver exam success in Edexcel's new Maths GCSE. Written for Higher tier students, the book focusses on developing students' fluency in key mathematical skills and problem solving using carefully chosen examples and extensive practice.

3D Computer Graphics Sam Buss 2003-05-19 Table of contents

Object Recognition M. Bennamoun 2001-12-12 Automatie object recognition is a multidisciplinary research area using con cepts and tools from mathematics, computing, optics, psychology, pattern recognition, artificial intelligence and various other disciplines. The purpose of this research is to provide a set of coherent paradigms and algorithms for the purpose of designing systems that will ultimately emulate the functions performed by the Human Visual System (HVS). Hence, such systems should have the ability to recognise objects in two or three dimensions independently of their positions, orientations or scales in the image. The HVS is employed for tens of thousands of recognition events each day, ranging from navigation (through the recognition of landmarks or signs), right through to communication (through the recognition of characters or people themselves). Hence, the motivations behind the construction of recognition systems, which have the ability to function in the real world, is unquestionable and would serve industrial (e.g. quality control), military (e.g. automatie target recognition) and community needs (e.g. aiding the visually impaired). Scope, Content and Organisation of this Book This book provides a comprehensive, yet readable foundation to the field of object recognition from which research may be initiated or guided. It repre sents the culmination of research topics that I have either covered personally or in conjunction with my PhD students. These areas include image acqui sition, 3-D object reconstruction, object modelling, and the matching of ob jects, all of which are essential in the construction of an object recognition system.

Proceedings of 3rd International Conference on Advanced Computing, Networking and Informatics Atulya Nagar 2015-09-03 Advanced Computing, Networking and Informatics are three distinct and mutually exclusive disciplines of knowledge with no apparent sharing/overlap among them. However, their convergence is observed in many real world applications, including cyber-security, internet banking, healthcare, sensor networks, cognitive radio, pervasive computing amidst many others. This two volume proceedings explore the combined use of Advanced Computing and Informatics in the next generation wireless networks and security, signal and image processing, ontology and human-computer interfaces (HCI). The two volumes together include 132 scholarly articles, which have been accepted for presentation from over 550 submissions in the Third International Conference on Advanced Computing, Networking and Informatics, 2015, held in Bhubaneswar, India during June 23-25, 2015.

Advanced Man-Machine Interaction K.-F. Kraiss 2006-02-23 Describes the implementation of modern features of man-machine interfaces and offers design guidelines, case studies and discusses algorithms for the implementation. Offers access to extensive public domain software for computer vision, classification and virtual reality.

An Introduction to Numerical Methods in C++ Brian Hilton Flowers 2000 Designed for the many applied mathematicians and engineers who wish to explore computerized numerical methods, this text communicates an enthusiasm for the power of C++, an object-oriented language, as a tool for this kind of work. This revision of the successful first edition includes for thefirst time information on programming in Windows-based environments. In addition this revision includes new topics and methods throughout the text that clarify and enhance the treatment of the subject. From reviews of the first edition: 'If you are interested in numerical methods or are looking fora course text this book is worth your attention.'" Journal of the Association of C and C++ Users *The Pixel Eye* Paul Levinson 2003-08-02 NYPD forensic detective Dr. Phil D'Amato's latest futuristic adventure pits personal loyalties against public responsibilities, safety against freedom, and the right to know against animal rights, all against a backdrop of a post 9/11 New York City.

SuperFractals Michael F. Barnsley 2006-09-07 SuperFractals, first published in 2006, describes mathematics and algorithms for the first time in book form, with breattaking colour pictures.

Fiber Optic Data Communication Casimer DeCusatis 2002-03-08 History of fiber optics / Jeff D. Montgomery -- Market analysis and business planning / Yann Y. Morvan and Ronald C. Lasky -- Small form factor fiber optic connectors / John Fox and Casimer DeCusatis -- Specialty fiber optic cables / Casimer DeCusatis and John Fox -- Optical wavelength division multiplexing for data communication networks / Casimer DeCusatis -- Optical backplanes, board and chip interconnects / Rainer Michalzik -- Parallel computer architectures using fiber optics / David B. Sher and Casimer DeCusatis -- Packaging assembly techniques / Ronald C. Lasky, Adam Singer, and Prashant Chouta -- InfiniBand, the interconnect from backplane to fiber / Ali Ghiasi -- New devices for optoelectronics : smart pixels / Barry L. Shoop, Andre H. Sayles, and Daniel M. Litynski -- Emerging technology for fiber optic data communication / Chung-Sheng Li -- Manufacturing challenges / Eric Maass.

Discovering Wavelets Edward Aboufadel 1999-10-05 An accessible and practical introduction to wavelets With applications in image processing, audio restoration, seismology, and elsewhere, wavelets have been the subject of growing excitement and interest over the past several years. Unfortunately, most books on wavelets are accessible primarily to research mathematicians. Discovering Wavelets presents basic and advanced concepts of wavelets in a way that is accessible to anyone with only a fundamental knowledge of linear algebra. The basic concepts of wavelet theory are introduced in the context of an explanation of how the FBI uses wavelets to compress fingerprint images. Wavelet theory is further developed in the setting of function spaces. The book then moves on to present more advanced topics such as filters, multiresolution analysis, Daubechies' wavelets, and further applications. The book concludes with a series of projects and problems that introduce advanced topics and offer starting points for research. Sample projects that demonstrate real wavelet applications include image compression, a wavelet-based search engine, processing with Daubechies' wavelets, and more. Among the special features of Discovering Wavelets are: * Real-life, hands-on examples that involve actual wavelet applications * A companion Web site containing Pixel Images software and Maple files to be used with the projects in the book * Challenging problems that reinforce and expand on the ideas being developed * An appendix containing the linear algebra needed to understand wavelets as presented in the book

My School Governance Handbook: Keeping it simple, a step by step guide and checklist for all school governors Al Kingsley 2022-11-07 With nearly two decades of school governance experience across Infant, Primary, Secondary, All Through and Alternative Provision schools and academies, distilled into an easy-to-read format, My School Governance Handbook aims to make the complex world of school governance simple and accessible to all. This handbook will take you step by step through the basics of school governance, what the role entails and what you need to know. It explains how schools

and multi academy trusts are structured, the key areas of school life you need to understand, relevant questions to ask and finally, includes a handy dictionary to help you navigate your way through all those pesky education acronyms. Including ideas and guidance from other experienced governors across the UK, 'My School Governance Handbook' is the perfect companion for any school governor or trustee.

Signal Processing for Computer Vision Gösta H. Granlund 1994-12-31 Signal Processing for Computer Vision is a unique and thorough treatment of the signal processing aspects of filters and operators for low-level computer vision. Computer vision has progressed considerably over recent years. From methods only applicable to simple images, it has developed to deal with increasingly complex scenes, volumes and time sequences. A substantial part of this book deals with the problem of designing models that can be used for several purposes within computer vision. These partial models have some general properties of invariance generation and generality in model generation. Signal Processing for Computer Vision is the first book to give a unified treatment of representation and filtering of higher order data, such as vectors and tensors in multidimensional space. Included is a systematic organisation for the implementation of complex models in a hierarchical modular structure and novel material on adaptive filtering using tensor data representation. Signal Processing for Computer Vision is intended for final year undergraduate and graduate students as well as engineers and researchers in the field of computer vision and image processing.

Parallel Algorithms for Regular Architectures Russ Miller 1996 Parallel-Algorithms for Regular Architectures is the first book to concentrate exclusively on algorithms and paradigms for programming parallel computers such as the hypercube, mesh, pyramid, and mesh-of-trees.

Digital Photoelasticity K. Ramesh 2000-03-06 A straightforward introduction to basic concepts and methodologies for digital photoelasticity, providing a foundation on which future researchers and students can develop their own ideas. The book thus promotes research into the formulation of problems in digital photoelasticity and the application of these techniques to industries. In one volume it provides data acquisition by DIP techniques, its analysis by statistical techniques, and its presentation by computer graphics plus the use of rapid prototyping technologies to speed up the entire process. The book not only presents the various techniques but also provides the relevant time-tested software codes. Exercises designed to support and extend the treatment are found at the end of each chapter.

Parallel and Distributed Discrete Event Simulation Carl Tropper 2002 Discrete-event simulation has long been an integral part of the design process of complex engineering systems and the modelling of natural phenomena. Many of the systems that we seek to understand or control can be modelled as digital systems. In a digital model, we view the system at discrete instants of time, in effect taking snapshots of the system at these instants. For example, in a computer network simulation an event can be the sending of a message from one node to another node while in a VLSI logic simulation, the arrival of a signal at a gate may be viewed as an event. Digital systems such as computer systems are naturally susceptible to this approach. However, a variety of other systems may also be modelled this way. These include transportation systems such as air-traffic control systems, epidemiological models such as the spreading of a virus, and military war-gaming models. This book is representative of the advances in this field.

Detection and Estimation Research of High-speed Railway Catenary Zhigang Liu 2016-10-01 This book describes the wave characteristics of contact lines taking wind into consideration and discusses new methods for detecting catenary geometry, pantograph slide fault, and catenary support system faults. It also introduces wire-irregularity detection methods for catenary estimation, and discusses modern spectrum estimation tools for catenary. It is organized in three parts: the first discusses statistical characteristics of pantograph-catenary data, such as stationarity, periodicity, correlation, high-order statistical properties and wave characteristics of contact lines, which are the basis of pantograph-catenary relationship analysis. The second part includes geometry parameter detection and support-system fault detection in catenary, as well as slide-fault detection in pantographs, and presents some new detection algorithms and plans. The final part addresses catenary estimation, including detection of contact-line wire irregularities and estimation of catenary based on spectrum, and presents detection methods for contact-line irregularity and modern spectrum estimation tools for catenary.

Towards Higher Mathematics: A Companion Richard Earl 2017-09-07 This book allows students to stretch their mathematical abilities and bridges the gap between school and university.

Handbook of Computer Animation John Vince 2003 Written by specialists in teaching computer animation, this text addresses key international topics of computer animation, such as: mathematics, modelling, rendering, and compositing. Each chapter discusses a particular topic and how it is applied, including state-of-the-art techniques that are used in computer animation. The handbook provides a complete and up-to-date picture of computer animation and will be a valuable reference source for programmers, technical directors and animators in computer animation, computer games and special effects and also undergraduate and postgraduate students. The editor, John Vince, has written and edited over 20 books on computer graphics, computer animation and virtual reality.

1089 and All that D. J. Acheson 2002 This excellent book, written by the established author David Acheson, makes mathematics accessible to everyone. Providing an entertaining and witty overview of the subject, the text includes several fascinating puzzles, and is accompanied by numerous illustrations and sketches by world famouscartoonists. This unusual book is one of the most readable explanations of mathematics available.

Computational Statistics Geof H. Givens 2005-02-02 A comprehensive, classroom-tested introduction to modern computational statistics This comprehensive introduction enables readers to develop a multifaceted and thorough knowledge of modern statistical computing and computational statistics. Backed by many years of classroom experience, the authors help readers gain a practical understanding of how and why modern statistical methods work, enabling readers to apply these methods effectively. Detailed examples are drawn from diverse fields such as bioinformatics, ecology, medicine, computer vision, and stochastic finance. The text emphasizes areas that are central to understanding the evolving field of computational statistics including areas where routine application of software often fails to solve complex problems. Topics covered include ordinary and combinatorial optimization, algorithms for missing data, numerical and Monte Carlo integration, simulation, introductory and advanced Markov chain Monte Carlo, bootstrapping, density estimation, and smoothing. Knowledge of computer languages is not required, making examples and algorithms easier for readers to follow. Everything needed to quickly learn and apply the material is provided and is presented in a fluid, jargon-free style with fascinating real-world examples and problem sets that have been tested in the classroom for more than a decade. Computational Statistics is recommended for graduate-level courses in statistics, computer science, mathematics, engineering, and other quantitative sciences. Advanced undergraduate students can also use this text to learn the basics and for deeper study as they progress. Chapters are written to stand independently, allowing instructors to build their own courses by selecting topics. Statisticians and quantitative empirical scientists will refer to this desktop reference often. By providing readers with a thorough understanding of contemporary statistical techniques, the book gives readers a solid foundation for contributing their own ideas and finding new applications for this dynamic field.

Introduction to Mathematical Statistics Robert V. Hogg 2003

The Boy Who Grew Dragons Andy Shepherd 2020-02-04 "'The Boy Who Grew Dragons' is good-hearted fantasy fun."-New York Times Book Review "This gently funny title is a must-purchase for public libraries, and a great recommendation for readers of all ages"-School Library Journal, STARRED REVIEW "Never has so much toilet humor been so charming."-Kirkus Reviews "Readers will be eager for more."-Booklist This hilarious middle-grade novel with

illustrations throughout sees Tomas discover that he can grow dragons in his own garden! When Tomas discovers a strange old tree at the bottom of his grandfather's garden, he doesn't think much of it. But he takes the funny fruit from the tree back into the house and gets the shock of his life when a tiny dragon hatches! The tree is a dragon fruit tree, and Tomas now has his very own dragon, Flicker! While Tomas finds out that life with Flicker is fun, he also finds that it is very...unpredictable. Yes, dragons are wonderful, but they also set fire to your toothbrush and leave your underwear hanging from the TV antenna. Tomas has to learn how to look after Flicker--and quickly! And then something extraordinary happens: More dragon fruits appear on the tree! Now it's official, Tomas is growing dragons.

Computer Graphics James D. Foley 1996 On computer graphics

Image Structure Luc Florack 1997-09-30 Despite the fact that images constitute the main objects in computer vision and image analysis, there is remarkably little concern about their actual definition. In this book a complete account of image structure is proposed in terms of rigorously defined machine concepts, using basic tools from algebra, analysis, and differential geometry. Machine technicalities such as discretisation and quantisation details are de-emphasised, and robustness with respect to noise is manifest. From the foreword by Jan Koenderink: `It is my hope that the book will find a wide audience, including physicists - who still are largely unaware of the general importance and power of scale space theory, mathematicians - who will find in it a principled and formally tight exposition of a topic awaiting further development, and computer scientists - who will find here a unified and conceptually well founded framework for many apparently unrelated and largely historically motivated methods they already know and love. The book is suited for self-study and graduate courses, the carefully formulated exercises are designed to get to grips with the subject matter and prepare the reader for original research.'

Bluescreen Compositing John Jackman 2007 DVD contains: "blue and greenscreen footage for use in the detailed tutorials."

Image Processing, Analysis, and Machine Vision Milan Sonka 2014-01-21 The brand new edition of IMAGE PROCESSING, ANALYSIS, AND MACHINE VISION is a robust text providing deep and wide coverage of the full range of topics encountered in the field of image processing and machine vision. As a result, it can serve undergraduates, graduates, researchers, and professionals looking for a readable reference. The book's encyclopedic coverage of topics is wide, and it can be used in more than one course (both image processing and machine vision classes). In addition, while advanced mathematics is not needed to understand basic concepts (making this a good choice for undergraduates), rigorous mathematical coverage is included for more advanced readers. It is also distinguished by its easy-to-understand algorithm descriptions of difficult concepts, and a wealth of carefully selected problems and examples. Important Notice: Media content referenced within the product description or the product text may not be available in the ebook version.

Innovation in Medicine and Healthcare 2015 Yen-Wei Chen 2015-08-31 Innovation in medicine and healthcare is an interdisciplinary research area, which combines the advanced technologies and problem solving skills with medical and biological science. A central theme of this proceedings is Smart Medical and Healthcare Systems (modern intelligent systems for medicine and healthcare), which can provide efficient and accurate solution to problems faced by healthcare and medical practitioners today by using advanced information communication techniques, computational intelligence, mathematics, robotics and other advanced technologies. The techniques developed in this area will have a significant effect on future medicine and healthcare. The volume includes 53 papers, which present the recent trend and innovations in medicine and healthcare including Medical Informatics; Biomedical Engineering; Management for Healthcare; Advanced ICT for Medical and Healthcare; Simulation and Visualization/VR for Medicine; Statistical Signal Processing and Artificial Intelligence; Smart Medical and Healthcare System and Healthcare Support System.

Edexcel AS and a Level Modular Mathematics Core Mathematics 1 C1 Greg Attwood 2008-04 "This book helps in raising and sustaining motivation for better grades. These books are the best possible match to the specification, motivating readers by making maths easier to learn. They include complete past exam papers and student-friendly worked solutions which build up to practice questions, for all round exam preparation. These books also feature real-life applications of maths through the 'Life-links' and 'Why ...?' pages to show readers how this maths relates, presenting opportunities to stretch and challenge more apply students. Each book includes a Live Text CDROM which features: fully worked solutions examined step-by-step, animations for key learning points, and revision support through the Exam Cafe."--Publisher's description

Adobe Photoshop CS3 Andrew Faulkner 2007 This tutorial covers Adobe's Photoshop CS3, including the new file browser, non-square pixel support and much more. Easy to use project files on the CD-ROM provide the perfect complement to the text.

Oxford Revise: AQA GCSE (9-1) Maths Foundation Revision Guide Katie Wood 2020-03 UK schools pay just 50% of the RRP! Discount automatically applied when ordering on your school account.Straightforward, visual, accessible: Oxford Revise AQA GCSE Maths offers no-fuss Revision Guides and Workbooks. Every topic is covered on a single page, providing a simple pick-up-and-go solution. Perfect for GCSE Maths students everywhere.

Parallel Supercomputing in SIMD Architectures R. Michael Hord 1990-04-30 Parallel Supercomputing in SIMD Architectures is a survey book providing a thorough review of Single-Instruction-Multiple-Data machines, a type of parallel processing computer that has grown to importance in recent years. It was written to describe this technology in depth including the architectural concept, its history, a variety of hardware implementations, major programming languages, algorithmic methods, representative applications, and an assessment of benefits and drawbacks. Although there are numerous books on parallel processing, this is the first volume devoted entirely to the massively parallel machines of the SIMD class. The reader already familiar with low order parallel processing will discover a different philosophy of parallelism--the data parallel paradigm instead of the more familiar program parallel scheme. The contents are organized into nine chapters, rich with illustrations and tables. The first two provide introduction and background covering fundamental concepts and a description of early SIMD computers. Chapters 3 through 8 each address specific machines from the first SIMD supercomputer (Illiacc IV) through several contemporary designs to some example research computers. The final chapter provides commentary and lessons learned. Because the test of any technology is what it can do, diverse applications are incorporated throughout, leading step by step to increasingly ambitious examples. The book is intended for a wide range of readers. Computer professionals will find sufficient detail to incorporate much of this material into their own endeavors. Program managers and applications system designers may find the solution to their requirements for high computational performance at an affordable cost. Scientists and engineers will find sufficient processing speed to make interactive simulation a practical adjunct to theory and experiment. Students will find a case study of an emerging and maturing technology. The general reader is afforded the opportunity to appreciate the power of advanced computing and some of the ramifications of this growing capability.

Silicon Optoelectronic Integrated Circuits Horst Zimmermann 2004-01-12 Explains the circuit design of silicon optoelectronic integrated circuits (OEICs), which are central to advances in wireless and wired telecommunications. The essential features of optical absorption are summarized, as is the device physics of photodetectors and their integration in modern bipolar, CMOS, and BiCMOS technologies. This information provides the basis for

understanding the underlying mechanisms of the OEICs described in the main part of the book. In order to cover the topic comprehensively, Silicon Optoelectronic Integrated Circuits presents detailed descriptions of many OEICs for a wide variety of applications from various optical sensors, smart sensors, 3D-cameras, and optical storage systems (DVD) to fiber receivers in deep-sub-µm CMOS. Numerous detailed illustrations help to elucidate the material.

The Pattern Book Clifford A. Pickover 1995 Although the patterns are computer-generated, the book is informal and emphasis is on the fun that the true pattern lover finds in doing rather than in reading about the doing.

Image Processing for Computer Graphics Jonas Gomes 1997 Image processing is a central theme in computer graphics. This book provides a modern introduction to both the underlying mathematics and the main concepts and techniques of the subject. It covers important modern techniques such as morphing and warping images as well as dithering, compositing, and other operations on images.

Oxford Revise: AQA GCSE Physics Revision and Exam Practice Helen Reynolds 2020-10-08 Based on principles of cognitive science, this three-step approach to effective revision combines knowledge, retrieval and interleaving, and extensive exam-style practice to help students master knowledge and skills for GCSE success. UK schools save 50% off the RRP! Discount will be automatically applied when you order on your school account.

Pattern Recognition with Neural Networks in C++ Abhijit S. Pandya 1995-10-17 The addition of artificial neural network computing to traditional pattern recognition has given rise to a new, different, and more powerful methodology that is presented in this interesting book. This is a practical guide to the application of artificial neural networks. Geared toward the practitioner, Pattern Recognition with Neural Networks in C++ covers pattern classification and neural network approaches within the same framework. Through the book's presentation of underlying theory and numerous practical examples, readers gain an understanding that will allow them to make judicious design choices rendering neural application predictable and effective. The book provides an intuitive explanation of each method for each network paradigm. This discussion is supported by a rigorous mathematical approach where necessary. C++ has emerged as a rich and descriptive means by which concepts, models, or algorithms can be precisely described. For many of the neural network models discussed, C++ programs are presented for the actual implementation. Pictorial diagrams and in-depth discussions explain each topic. Necessary derivative steps for the mathematical models are included so that readers can incorporate new ideas into their programs as the field advances with new developments. For each approach, the authors clearly state the known theoretical results, the known tendencies of the approach, and their recommendations for getting the best results from the method. The material covered in the book is accessible to working engineers with little or no explicit background in neural networks. However, the material is presented in sufficient depth so that those with prior knowledge will find this book beneficial. Pattern Recognition with Neural Networks in C++ is also suitable for courses in neural networks at an advanced undergraduate or graduate level. This book is valuable for academic as well as practical research.

Tensor Voting Philippos Mordohai 2006-12-01 This lecture presents research on a general framework for perceptual organization that was conducted mainly at the Institute for Robotics and Intelligent Systems of the University of Southern California. It is not written as a historical recount of the work, since the sequence of the presentation is not in chronological order. It aims at presenting an approach to a wide range of problems in computer vision and machine learning that is data-driven, local and requires a minimal number of assumptions. The tensor voting framework combines these properties and provides a unified perceptual organization methodology applicable in situations that may seem heterogeneous initially. We show how several problems can be posed as the organization of the inputs into salient perceptual structures, which are inferred via tensor voting. The work presented here extends the original tensor voting framework with the addition of boundary inference capabilities; a novel re-formulation of the framework applicable to high-dimensional spaces and the development of algorithms for computer vision and machine learning problems. We show complete analysis for some problems, while we briefly outline our approach for other applications and provide pointers to relevant sources.

Embedded Media Processing David J. Katz 2005-09-07 In the past, embedded engineers needed to utilize a combination of traditional microcontrollers and DSP's (digital signal processors) in order to produce optimal designs for use in multimedia applications. However, this multiprocessor design technique is tough to implement, because it requires the engineer to write twice the code. Further, the designs resulting from such a marriage are limited because two processors cost more, take up more physical space, require more memory, and use up more power than just one would. And so a new kind of processor, the EMP (embedded media processor), was born! An embedded media processor combines the best aspects of a traditional microncontroller and a DSP for use in a multimedia product. As the demand grows for smaller, faster, multifunction, portable embedded products, such as video-enabled cellphones and pda's that play music or games, EMP's become more popular. As a result, an increasing number of engineers need to migrate from using multiprocessor methods to using EMP's in their designs. This book is the one-stop shop for the many engineers who need to understand what embedded media processors can do, and how to implement them. KEY FEATURES: comprehensive subject coverage with emphasis on practical application essential assembly language code included throughout many real-world examples using Analog's popular Blackfin Processor architecture This book provides information that engineers cannot get anywhere else. The discussion of EMP's is general enough to assure that engineers using any EMP, not just the Blackfin, will benefit from it. The book's in-depth analysis will allow engineers to decrease product development times and increase robust design for applications in multimedia. For about \$50, the engineer is equipped by the experts and empowered to succeed.

Scanning Probe Lithography Hyongsok T. Soh 2001-06-30 Scanning Probe Lithography (SPL) describes recent advances in the field of scanning probe lithography, a high resolution patterning technique that uses a sharp tip in close proximity to a sample to pattern nanometer-scale features on the sample. SPL is capable of patterning sub-30nm features with nanometer-scale alignment registration. It is a relatively simple, inexpensive, reliable method for patterning nanometer-scale features on various substrates. It has potential applications for nanometer-scale research, for maskless semiconductor lithography, and for photomask patterning. The authors of this book have been key players in this exciting new field. Calvin Quate has been involved since the beginning in the early 1980s and leads the research time that is regarded as the foremost group in this field. Hyongsok Tom Soh and Kathryn Wilder Guarini have been the members of this group who, in the last few years, have brought about remarkable series of advances in SPM lithography. Some of these advances have been in the control of the tip which has allowed the scanning speed to be increased from mum/second to mm/second. Both non-contact and in-contact writing have been demonstrated as has controlled writing of sub-100 nm lines over large steps on the substrate surface. The engineering of a custom-designed MOSFET built into each microcantilever for individual current control is another notable achievement. Micromachined arrays of probes each with individual control have been demonstrated. One of the most intriguing new aspects is the use of directly-grown carbon nanotubes as robust, high-resolution emitters. In this book the authors concisely and authoritatively describe the historical context, the relevant inventions, and the prospects for eventual manufacturing use of this exciting new technology.