An Introduction To Nurbs With Historical Perspective The Morgan Kaufmann Series In Computer Graphics By David F Rogers 2000 08 04

An Introduction to NURBS **The NURBS Book** The History of Visual Magic in Computers **Brick and Block Masonry - From Historical to Sustainable Masonry The Second Digital Turn** *Isogeometric Analysis* Computational Modeling, Optimization and Manufacturing Simulation of Advanced Engineering Materials **Splines and PDEs: From Approximation Theory to Numerical Linear Algebra Geometry for Naval Architects** *Computational Science – ICCS 2019* **Isogeometric Methods for Numerical Simulation 41st AIAA/ASME/SAE/ASEE Joint Propulsion Conference & Exhibit 10-13 July 2005, Tucson, Arizona: 05-4000 - 05-4049** 3D Rendering *Advanced Computing* Image and Signal Processing Advances in Computational Vision and Medical Image Processing **Digital Media Fundamentals of Computer Graphics** The Essentials of CAGD *Computer Graphics and Geometric Modelling* Numerical Modeling of Masonry and Historical Structures *Machine Design and Manufacturing Engineering II* Interactive Curves and Surfaces Digital Cultural Heritage NURBS for Curve & Surface Design **Complete Maya Programming** Digital Heritage. Progress in Cultural Heritage: Documentation, Preservation, and Protection Introducing Maya 6 *Maya in 24 Hours, Sams Teach Yourself Structural Analysis of Historical Constructions Nondestructive Techniques for the Assessment and Preservation of Historic Structures Introducing Maya 8* **Maya 5 Fundamentals** The History of the Theory of Structures *Mastering Maya 7* **Introducing Autodesk Maya 2016 Introducing Autodesk Maya 2013** From Corbel Arches to Double Curvature Vaults **Introducing Maya 5** Maya Manual

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Introducing Autodesk Maya 2016 Oct 26 2019 Start modeling right away with this hands-on guide to learning Autodesk Maya 2016 Introducing Autodesk Maya 2016 is the official guide to the most popular and complex 3D application on the market. Building from the ground up, this book combines straightforward text with practical examples that make it easy to absorb the basics and start designing and animating your own digital models and scenes. The tutorials offer realistic challenges and clear explanations, laid out in fun, step-by-step lessons that help you gain confidence and learn by doing. You'll delve into CG and 3D core concepts and production workflows, then get right to work designing an animation of the solar system as you learn the interface and basic tools. As your modeling skills grow, you'll build a steam locomotive, a starfish, a table lamp, and much more as you learn to rig your model for animation, create

fabric motion with nCloth, and add the lighting and effects that bring your scenes to life. The companion website features downloadable project files that help you see how the pros do it, and the book includes real-world examples from talented users who were beginners just like you. Master the Maya 2016 interface, menus, and plug-ins Begin building simple animations right away Explore modeling, rendering, animation, and cloth motion Add lighting, rendering, dynamics, simulations, and effects If you want to work like the pros, Introducing Autodesk Maya 2016 is the perfect primer for getting started.

Isogeometric Methods for Numerical Simulation Dec 21 2021 The book presents the state of the art in isogeometric modeling and shows how the method has advantaged. First an introduction to geometric modeling with NURBS and T-splines is given followed by the implementation into computer software. The implementation in both the FEM and BEM is discussed.

Introducing Autodesk Maya 2013 Sep 25 2019 A complete update to the popular Autodesk Official Training Guide for Maya Maya is the industry-leading 3D animation and effects software used in movies, visual effects, games, cartoons, and other animation. This bestselling, official guide is a must for 3D beginners who want a thorough grounding in this dynamic and complex software. Fully updated for the newest version of Maya, the book explains the interface and the basics of modeling, texturing, animating, dynamics, visualization, and visual effects. Fun and challenging tutorials lead you through the nuances of the software and offer plenty of chances to practice what you've learned. The Autodesk Official Training Guide for Maya, endorsed and promoted by Autodesk to its 2,500 Authorized Training Centers worldwide Maya is the 3D animation and effects software used in the film, game, and advertising industries; it's a complex program and this book gives beginners the knowledge and confidence they need Shows how to master the interface and the basics of modeling, texturing, animating, and visual effects Step-by-step tutorials offer realistic, professional challenges for those new to 3D and those switching from another 3D application Materials are available for instructors who want to use this guide with their students Introducing Autodesk Maya is the perfect guide to get you up and running on the world's most popular professional 3D application.

Image and Signal Processing Aug 17 2021 This book constitutes the refereed proceedings of the 6th International Conference, ICISP 2014, held in June/July 2014 in Cherbourg, France. The 76 revised full papers were carefully reviewed and selected from 164 submissions. The contributions are organized in topical sections on multispectral colour science, color imaging and applications, digital cultural heritage, document image analysis, graph-based representations, image filtering and representation, computer vision and pattern recognition, computer graphics, biomedical, and signal processing.

Introducing Maya 5 Jul 24 2019 Alias Wavefront's Maya is the premier tool for 3D modeling, animation, and rendering. It is used by such film houses as Industrial, Light & Magic, Pixar, and Disney for creating 3D animation and special effects. This Maya Press title—a cooperative publication between Sybex and Alias Wavefront—is the perfect introduction to 3D and Maya. Note: CD-ROM/DVD and other supplementary materials are not included as part of eBook file.

Digital Media Jun 14 2021 Focusing on the computer graphics required to create digital media this book discusses the concepts and provides hundreds of solved examples and unsolved problems for practice. Pseudo codes are included where appropriate but these coding examples do not rely on specific languages. The aim is to get readers to understand the ideas and how concepts and algorithms work, through practicing numeric examples. Topics covered include: 2D Graphics 3D Solid Modelling Mapping Techniques Transformations in 2D and 3D Space Illuminations, Lighting and Shading Ideal as an upper level undergraduate text, Digital Media – A Problem-solving Approach for Computer Graphic, approaches the field at a conceptual level thus no programming experience is required, just a basic knowledge of mathematics and linear algebra.

Maya Manual Jun 22 2019 Alias|Wavefront’s Maya 3D animation software is an integrated collection of tools for creating computer generated images, used in nearly every blockbuster special effects film that has been released in the last few years. The first choice for digital content creators, Maya combines animation, dynamics, modelling and rendering tools, enabling you to create digital characters and visual effects for live action films or stand-alone animation.

Computational Modeling, Optimization and Manufacturing Simulation of Advanced Engineering Materials Apr 24 2022 This volume presents recent research work focused in the development of adequate theoretical and numerical formulations to describe the behavior of advanced engineering materials. Particular emphasis is devoted to applications in the fields of biological tissues, phase changing and porous materials, polymers and to micro/nano scale modeling.

Sensitivity analysis, gradient and non-gradient based optimization procedures are involved in many of the chapters, aiming at the solution of constitutive inverse problems and parameter identification. All these relevant topics are exposed by experienced international and inter institutional research teams resulting in a high level compilation. The book is a valuable research reference for scientists, senior undergraduate and graduate students, as well as for engineers acting in the area of computational material modeling.

Numerical Modeling of Masonry and Historical Structures Feb 08 2021 Numerical Modeling of Masonry and Historical Structures: From Theory to Application provides detailed information on the theoretical background and practical guidelines for numerical modeling of unreinforced and reinforced (strengthened) masonry and historical structures. The book consists of four main sections, covering seismic vulnerability analysis of masonry and historical structures, numerical modeling of unreinforced masonry, numerical modeling of FRP-strengthened masonry, and numerical modeling of TRM-strengthened masonry. Each section reflects the theoretical background and current state-of-the art, providing practical guidelines for simulations and the use of input parameters. Covers important issues relating to advanced methodologies for the seismic vulnerability assessment of masonry and historical structures Focuses on modeling techniques used for the nonlinear analysis of unreinforced masonry and strengthened masonry structures Follows a theory to practice approach

The History of the Theory of Structures Dec 29 2019 This book traces the evolution of theory of structures and strength of materials - the development of the geometrical thinking of the Renaissance to become the fundamental engineering science discipline rooted in classical mechanics. Starting with the strength experiments of Leonardo da Vinci and Galileo, the author examines the emergence of individual structural analysis methods and their formation into theory of structures in the 19th century. For the first time, a book of this kind outlines the development from classical theory of structures to the structural mechanics and computational mechanics of the 20th century. In doing so, the author has managed to bring alive the differences between the players with respect to their engineering and scientific profiles and personalities, and to create an understanding for the social context. Brief insights into common methods of analysis, backed up by historical details, help the reader gain an understanding of the history of structural mechanics from the standpoint of modern engineering practice. A total of 175 brief biographies of important personalities in civil and structural engineering as well as structural mechanics plus an extensive bibliography round off this work.

3D Rendering Oct 19 2021

From Corbel Arches to Double Curvature Vaults Aug 24 2019 The book focuses on all typological aspects of arches and vaults within the heritage of design and construction, while bringing attention to new “green” materials, promoting a circular economy informed by limitations caused by global warming. The multidisciplinary approach involves several different competences in architecture, structural engineering, conservation and restoration, geomatics, BIM, building engineering, the technology and history of construction, graphical methods of assessment, and innovative design that utilizes non-polluting materials. After an overview of the technical and aesthetic advantages of masonry vaults, there is a review of the most up-to-date trends in historic preservation. Classic methods of static assessment and innovative building technologies are detailed. Surveying methods and data acquisition are discussed, particularly laser scanning technology and its applications in heritage masonry curved structures. Next comes the experimental static and dymanic behavior of masonry vaults, followed by a critical revision of Distinct Element innovative computerized Methods. An explanation as to how to pass from classic stability analysis to an adaptive Finite Element Method limit analysis procedure is offered. Reinterpretation of the past is then undertaken, with an eye towards emphasizing sustainability. Finally, the conclusion examines still existing gaps in knowledge and recommends avenues of future research.

The Second Digital Turn Jun 26 2022 The first digital turn in architecture changed our ways of making; the second changes our ways of thinking. Almost a generation ago, the early software for computer aided design and manufacturing (CAD/CAM) spawned a style of smooth and curving lines and surfaces that gave visible form to the first digital age, and left an indelible mark on contemporary architecture. But today's digitally intelligent architecture no longer looks that way. In The Second Digital Turn, Mario Carpo explains that this is because the design professions are now coming to terms with a new kind of digital tools they have adopted—no longer tools for making but tools for thinking. In the early 1990s the design professions were the first to intuit and interpret the new

technical logic of the digital age: digital mass-customization (the use of digital tools to mass-produce variations at no extra cost) has already changed the way we produce and consume almost everything, and the same technology applied to commerce at large is now heralding a new society without scale—a flat marginal cost society where bigger markets will not make anything cheaper. But today, the unprecedented power of computation also favors a new kind of science where prediction can be based on sheer information retrieval, and form finding by simulation and optimization can replace deduction from mathematical formulas. Designers have been toying with machine thinking and machine learning for some time, and the apparently unfathomable complexity of the physical shapes they are now creating already expresses a new form of artificial intelligence, outside the tradition of modern science and alien to the organic logic of our mind.
Computer Graphics and Geometric Modelling Mar 12 2021 Possibly the most comprehensive overview of computer graphics as seen in the context of geometric modelling, this two volume work covers implementation and theory in a thorough and systematic fashion. Computer Graphics and Geometric Modelling: Implementation and Algorithms, covers the computer graphics part of the field of geometric modelling and includes all the standard computer graphics topics. The first part deals with basic concepts and algorithms and the main steps involved in displaying photorealistic images on a computer. The second part covers curves and surfaces and a number of more advanced geometric modelling topics including intersection algorithms, distance algorithms, polygonizing curves and surfaces, trimmed surfaces, implicit curves and surfaces, offset curves and surfaces, curvature, geodesics, blending etc. The third part touches on some aspects of computational geometry and a few special topics such as interval analysis and finite element methods. The volume includes two companion programs.
Maya in 24 Hours, Sams Teach Yourself Jun 02 2020 In just 24 sessions of one hour or less, Sams Teach Yourself Maya® in 24 Hours will help you master Autodesk Maya 2014 and use it to create outstanding 3D graphics and animations. Using this book’s straightforward, step-by-step approach, you’ll master powerful Maya 2014 tools for modeling, texturing, rigging, animating, lighting, rendering, and more. Every lesson builds on what you’ve already learned, giving you a rock-solid foundation for real-world success! Step-by-step instructions carefully walk you through the most common Maya tasks. Quizzes and exercises test your knowledge of key Maya 2014 tools at the end of each hour. Notes present interesting information related to the discussion. Tips offer advice or show you easier ways to perform tasks. Learn how to… Get comfortable with Autodesk Maya 2014's complex interface Quickly access the Maya 2014 tools you need for any task Efficiently manage your assets and files Model with polygonal geometry and NURBS curves/surfaces Unfold UVs and apply textures Create node networks in the hypershade Model highly realistic characters Utilize relationships and make nodes work together Rig your objects and characters for animation Add animated movement to your scenes Create and adjust cameras Build diverse shapes with BlendShapes Animate using dynamics and simulations Script and automate common tasks Improve realism with particles, hair/cloth effects, and more Correctly light your scenes Render your final imagery Work effectively with film Manage your projects and scene workflows more efficiently On the DVD: The accompanying DVD contains how-to videos for dozens of key Maya 2014 tasks, extensive sample art and models, and additional bonus content.
Digital Heritage. Progress in Cultural Heritage: Documentation, Preservation, and Protection Aug 05 2020 This two-volume set LNCS 10058 and LNCS 10059 constitutes the refereed proceedings of the 6th International Conference on Digital Heritage, EuroMed 2016, held in Nicosia, Cyprus, in October/November 2016. The 29 full papers, 44 project papers, and 32 short papers presented were carefully reviewed and selected from 502 submissions. The papers are organized in topical sections on 3D Reconstruction and 3D Modelling; Heritage Building Information Models; Innovative Methods on Risk Assesment, Monitoring and Protection of Cultural Heritage; Intangible Cultural Heritage Documentation; Digital Applications for Materials' Preservation and Conservation in Cultural Heritage; Non-Destructive Techniques in Cultural Heritage Conservation; Visualisation, VR and AR Methods and Applications; The New Era of Museums and Exhibitions: Digital Engagement and Dissemination; Digital Cultural Heritage in Education, Learning and Training; Data Acquisition, Process and Management in Cultural Heritage; Data, Metadata, Semantics and Ontologies in Cultural Heritage; Novel Approaches to Landscapes in Cultural Heritage; Digital Applications for Materials' Preservation and Conservation in Cultural Heritage; and Serious Games for Cultural Heritage.
Introducing Maya 8 Feb 29 2020 If you're just beginning to dive into the world of 3D, this is the book for you." ?Animation Magazine The Academy Award® winning Maya® 3D animation and effects software is the first choice of film and video artists, game developers, and 3D design professionals. Discover how to

build, render, and animate your own digital models and scenes, and begin to develop professional-level Maya skills with the latest edition of this popular bestseller. Starting with the basics, the book builds from the ground up, combining straightforward text with practical examples that make it fun and easy to learn Maya's core features while introducing new Maya 8 elements such as improved polygon tools and enhanced rendering with mental ray. Clear-cut, engaging lessons let you experiment using the wealth of files provided on the CD-ROM. You'll also find an abundance of instructional and inspirational Maya creations in the full-color insert. The accompanying CD-ROMs images, movies, and scene files let you view material from the book right on your own computer. Tackle all-new rendering and dynamics tutorials and much more. The CD includes Maya Personal Learning Edition software.

Nondestructive Techniques for the Assessment and Preservation of Historic Structures Mar 31 2020 New technologies play an increasingly important role in the analysis, monitoring, restoration, and preservation of historic structures. These technological systems continue to get more advanced and complex, for example: 3D digital construction and documentation programming, 3D imaging data (including laser scanning and photogrammetry), multispectral and thermographic imaging, geophysical data, etc. This book will present the latest nondestructive technologies used in the characterization, preservation, and structural health monitoring of historic buildings. It will include numerous case studies, as well as theoretical explanations about each of the methods and technologies used in each.

Introducing Maya 6 Jul 04 2020 "If you're just beginning to dive into the world of 3D, this is the book for you." —Animation Magazine Alias' Academy Award winning Maya 3D animation and effects software leads the industry in technological innovation. Film and video artists, computer game developers, and design professionals rely on Maya to create brilliant digital imagery, animation, and visual effects. Now you can enter this exciting, imaginative world and learn to build, render, and animate your own digital characters and scenes. Brought to you by Maya Press, a publishing partnership between Sybex and Alias, Introducing Maya 6: 3D for Beginners is the ideal initiation to 3D and Maya. Written explicitly for the Maya novice, the easy-to-grasp text offers a practical and fun approach to learning Maya's core features. Clear-cut, engaging lessons let you try out these features using working files provided on the CD. You'll also find an abundance of instructional and inspirational art on the CD and full-color insert. Enter a New Dimension Get a solid grasp of the core Maya and 3D Learn to navigate the new Maya 6 interface Experiment with Maya modeling Explore the basics of NURBS, polygons, and subdivision surfaces Discover the nuances of shading and texturing Try your hand at animation Get a feel for Maya lighting, rendering, and dynamics Find out how to use Maya and Photoshop in unison Note: CD-ROM/DVD and other supplementary materials are not included as part of eBook file.

NURBS for Curve & Surface Design Oct 07 2020 Non-Uniform Rational B-Splines have become the de facto standard in CAD/CAM and computer graphics. This well-known book covers NURBS from their geometric beginnings to their industrial applications. The second edition incorporates new results and a chapter on Pythagorean curves, a development that shows promise in applications such as NC machining

Fundamentals of Computer Graphics May 14 2021 Drawing on an impressive roster of experts in the field, Fundamentals of Computer Graphics, Fourth Edition offers an ideal resource for computer course curricula as well as a user-friendly personal or professional reference. Focusing on geometric intuition, the book gives the necessary information for understanding how images get onto the screen by using the complementary approaches of ray tracing and rasterization. It covers topics common to an introductory course, such as sampling theory, texture mapping, spatial data structure, and splines. It also includes a number of contributed chapters from authors known for their expertise and clear way of explaining concepts. Highlights of the Fourth Edition Include: Updated coverage of existing topics Major updates and improvements to several chapters, including texture mapping, graphics hardware, signal processing, and data structures A text now printed entirely in four-color to enhance illustrative figures of concepts The fourth edition of Fundamentals of Computer Graphics continues to provide an outstanding and comprehensive introduction to basic computer graphic technology and theory. It retains an informal and intuitive style while improving precision, consistency, and completeness of material, allowing aspiring and experienced graphics programmers to better understand and apply foundational principles to the development of efficient code in creating film, game, or web designs. Key Features Provides a thorough treatment of basic and advanced topics in current graphics algorithms Explains core principles intuitively, with numerous examples and pseudo-code Gives updated coverage of the graphics pipeline,

signal processing, texture mapping, graphics hardware, reflection models, and curves and surfaces Uses color images to give more illustrative power to concepts
Digital Cultural Heritage Nov 07 2020 This book constitutes the refereed post-conference proceedings of the Final Conference of the Marie Sk?odowska-Curie Initial Training Network for Digital Cultural Heritage, held in Olimje, Slovenia, in May 2017. The 29 revised full papers included in this volume were carefully reviewed and selected from 198 submissions. They focus on interdisciplinary and multi-disciplinary research concerning cutting edge cultural heritage informatics, -physics, -chemistry and -engineering and the use of technology for the representation, documentation, archiving, protection, preservation and communication of cultural heritage knowledge.
Mastering Maya 7 Nov 27 2019 Provides information on the Maya interface, covering such topics as modeling, texturing and rendering, and rigging and animation.
Maya 5 Fundamentals Jan 28 2020 An introduction to the latest version of Maya provides detailed coverage of essential product and workflow data and covers such topics as materials and textures, lighting effects, and rendering stills and animation.
Geometry for Naval Architects Feb 20 2022 Geometry for Naval Architects is the essential guide to the principles of naval geometry. Formerly fragmented throughout various sources, the topic is now presented in this comprehensive book that explains the history and specific applications of modern naval architecture mathematics and techniques, including numerous examples, applications and references to further enhance understanding. With a natural four-section organization (Traditional Methods, Differential Geometry, Computer Methods, and Applications in Naval Architecture), users will quickly progress from basic fundamentals to specific applications. Careful instruction and a wealth of practical applications spare readers the extensive searches once necessary to understand the mathematical background of naval architecture and help them understand the meanings and uses of discipline-specific computer programs. Explains the basics of geometry as applied to naval architecture, with specific practical applications included throughout the book for real-life insights Presents traditional methods and computational techniques (including MATLAB) Provides a wealth of examples in MATLAB and MultiSurf (a computer-aided design package for naval architects and engineers) Includes supplemental MATLAB and MultiSurf code available on a companion site
The NURBS Book Sep 29 2022 Until recently B-spline curves and surfaces (NURBS) were principally of interest to the computer aided design community, where they have become the standard for curve and surface description. Today we are seeing expanded use of NURBS in modeling objects for the visual arts, including the film and entertainment industries, art, and sculpture. NURBS are now also being used for modeling scenes for virtual reality applications. These applications are expected to increase. Consequently, it is quite appropriate for The.N'URBS Book to be part of the Monographs in Visual Communication Series. B-spline curves and surfaces have been an enduring element throughout my pro fessional life. The first edition of Mathematical Elements for Computer Graphics, published in 1972, was the first computer aided design/interactive computer graph ics textbook to contain material on B-splines. That material was obtained through the good graces of Bill Gordon and Louie Knapp while they were at Syracuse University. A paper of mine, presented during the Summer of 1977 at a Society of Naval Architects and Marine Engineers meeting on computer aided ship surface design, was arguably the first to examine the use of B-spline curves for ship design. For many, B-splines, rational B-splines, and NURBS have been a bit mysterious.
41st AIAA/ASME/SAE/ASEE Joint Propulsion Conference & Exhibit 10-13 July 2005, Tucson, Arizona: 05-4000 - 05-4049 Nov 19 2021
An Introduction to NURBS Oct 31 2022 NURBS (Non-uniform Rational B-Splines) are the computer graphics industry standard for curve and surface description. They are now incorporated into all standard computer-aided design and drafting programs (for instance, Autocad). They are also extensively used in all aspects of computer graphics including much of the modeling used for special effects in film and animation, consumer products, robot control, and automobile and aircraft design. So, the topic is particularly important at this time because NURBS are really at the peak of interest as applied to computer graphics and CAD of all kind.
Isogeometric Analysis May 26 2022 “The authors are the originators of isogeometric analysis, are excellent scientists and good educators. It is very original. There is no other book on this topic.” —René de Borst, Eindhoven University of Technology Written by leading experts in the field and featuring fully

integrated colour throughout, Isogeometric Analysis provides a groundbreaking solution for the integration of CAD and FEA technologies. Tom Hughes and his researchers, Austin Cottrell and Yuri Bazilevs, present their pioneering isogeometric approach, which aims to integrate the two techniques of CAD and FEA using precise NURBS geometry in the FEA application. This technology offers the potential to revolutionise automobile, ship and airplane design and analysis by allowing models to be designed, tested and adjusted in one integrative stage. Providing a systematic approach to the topic, the authors begin with a tutorial introducing the foundations of Isogeometric Analysis, before advancing to a comprehensive coverage of the most recent developments in the technique. The authors offer a clear explanation as to how to add isogeometric capabilities to existing finite element computer programs, demonstrating how to implement and use the technology. Detailed programming examples and datasets are included to impart a thorough knowledge and understanding of the material. Provides examples of different applications, showing the reader how to implement isogeometric models Addresses readers on both sides of the CAD/FEA divide Describes Non-Uniform Rational B-Splines (NURBS) basis functions

Brick and Block Masonry - From Historical to Sustainable Masonry Jul 28 2022 Brick and Block Masonry - From Historical to Sustainable Masonry contains the keynote and semi-keynote lectures and all accepted regular papers presented online during the 17th International Brick and Block Masonry Conference IB2MaC (Kraków, Poland, July 5-8, 2020). Masonry is one of the oldest structures, with more than 6,000 years of history. However, it is still one of the most popular and traditional building materials, showing new and more attractive features and uses. Modern masonry, based on new and modified traditional materials and solutions, offers a higher quality of life, energy savings and more sustainable development. Hence, masonry became a more environmentally friendly building structure. Brick and Block Masonry - From Historical to Sustainable Masonry focuses on historical, current and new ideas related to masonry development, and will provide a very good platform for sharing knowledge and experiences, and for learning about new materials and technologies related to masonry structures. The book will be a valuable compendium of knowledge for researchers, representatives of industry and building management, for curators and conservators of monuments, and for students.

Structural Analysis of Historical Constructions May 02 2020 This volume contains the proceedings of the 11th International Conference on Structural Analysis of Historical Constructions (SAHC) that was held in Cusco, Peru in 2018. It disseminates recent advances in the areas related to the structural analysis of historical and archaeological constructions. The challenges faced in this field show that accuracy and robustness of results rely heavily on an interdisciplinary approach, where different areas of expertise from managers, practitioners, and scientists work together. Bearing this in mind, SAHC 2018 stimulated discussion on the new knowledge developed in the different disciplines involved in analysis, conservation, retrofit, and management of existing constructions. This book is organized according to the following topics: assessment and intervention of archaeological heritage, history of construction and building technology, advances in inspection and NDT, innovations in field and laboratory testing applied to historical construction and heritage, new technologies and techniques, risk and vulnerability assessments of heritage for multiple types of hazards, repair, strengthening, and retrofit of historical structures, numerical modeling and structural analysis, structural health monitoring, durability and sustainability, management and conservation strategies for heritage structures, and interdisciplinary projects and case studies. This volume holds particular interest for all the community interested in the challenging task of preserving existing constructions, enable great opportunities, and also uncover new challenges in the field of structural analysis of historical and archeological constructions.

Splines and PDEs: From Approximation Theory to Numerical Linear Algebra Mar 24 2022 This book takes readers on a multi-perspective tour through state-of-the-art mathematical developments related to the numerical treatment of PDEs based on splines, and in particular isogeometric methods. A wide variety of research topics are covered, ranging from approximation theory to structured numerical linear algebra. More precisely, the book provides (i) a self-contained introduction to B-splines, with special focus on approximation and hierarchical refinement, (ii) a broad survey of numerical schemes for control problems based on B-splines and B-spline-type wavelets, (iii) an exhaustive description of methods for computing and analyzing the spectral distribution of discretization matrices, and (iv) a detailed overview of the mathematical and implementational aspects of isogeometric analysis. The text is the outcome of a C.I.M.E. summer school held in Cetraro (Italy), July 2017, featuring four prominent lecturers with different theoretical and application perspectives. The book may serve both as a

reference and an entry point into further research.

Machine Design and Manufacturing Engineering II Jan 10 2021 Collection of selected, peer reviewed papers from the 2013 2nd International Conference on Machine Design and Manufacturing Engineering (ICMDME 2013), May 1-2, 2013, Jeju Island, South Korea. Volume is indexed by Thomson Reuters CPCI-S (WoS). The 275 papers are grouped as follows: Chapter 1: Design of Machines, Mechanisms and Industrial Devices; Chapter 2: Computational Technologies and Computer-Aided Design in Mechanical Engineering; Chapter 3: Researches, Modeling and Analysis of Machines and Mechanisms; Chapter 4: Automotive Engineering; Chapter 5: Technologies and Organization of Production in Mechanical Engineering; Chapter 6: Sensors, Detection and Measuring Technologies; Chapter 7: Robotics, Automation and Control System; Chapter 8: Applied Materials Science and Chemical Engineering; Chapter 9: Product Design; Chapter 10: Other Themes of Research.

Interactive Curves and Surfaces Dec 09 2020 The growing importance of animation and 3D design has caused computer-aided geometric design (CAGD) to be of interest to a wide audience of programmers and designers. This interactive software/book tutorial teaches fundamental CAGD concepts and discusses the growing number of applications in such areas as geological modeling, molecular modeling, commercial advertising, and animation. Using interactive examples and animations to illustrate the mathematical concepts, this hands-on multimedia tutorial enables users without a substantial mathematical background to quickly gain intuition about CAGD. Interactive Curves and Surfaces guides you in Learning the uses of CAGD as it is applied in computer graphics and engineering. Creating curved lines and surfaces using Bezier curves, B-Splines, and parametric surface patches. Understanding the mathematical tools behind the generation of these objects, and the development of computer-based CAGD algorithms. Experimenting with powerful interactive test benches to explore the behavior and characteristics of the most popular CAGD curves. Application oriented readers will find this animated tutorial presentation more accessible than the standard formal texts on the subject.

Advances in Computational Vision and Medical Image Processing Jul 16 2021 Computational methodologies of signal processing and imaging analysis, namely considering 2D and 3D images, are commonly used in different applications of the human society. For example, Computational Vision systems are progressively used for surveillance tasks, traf?c analysis, recognition process, inspection p- poses, human-machine interfaces, 3D vision and deformation analysis. One of the main characteristics of the Computational Vision domain is its int- multidisciplinary. In fact, in this domain, methodologies of several more fundam- tal sciences, such as Informatics, Mathematics, Statistics, Psychology, Mechanics and Physics are usually used. Besides this inter-multidisciplinary characteristic, one of the main reasons that contributes for the continually effort done in this domain of the human knowledge is the number of applications in the medical area. For instance, it is possible to consider the use of statistical or physical procedures on medical images in order to model the represented structures. This modeling can have different goals, for example: shape reconstruction, segmentation, registration, behavior interpretation and simulation, motion and deformation analysis, virtual reality, computer-assisted therapy or tissue characterization. The main objective of the ECCOMAS Thematic Conferences on Computational Vision and Medical Image Processing (VIPimage) is to promote a comprehensive forum for discussion on the recent advances in the related ?elds trying to id- tify widespread areas of potential collaboration between researchers of different sciences.

The Essentials of CAGD Apr 12 2021 Putting the G into CAGD, the authors provide a much-needed practical and basic introduction to computer-aided geometric design. This book will help readers understand and use the elements of computer-aided geometric design, curves and surfaces, without the mathematical baggage that is necessary only for more advanced work. Though only minimal background in mathematics is needed to understand the bookís concepts, the book covers an amazing array of topics such as Bezier and B-spline curves and their corresponding surfaces, subdivision surfaces, and NURBS (Non-Uniform Rational B-Splines). Also included are techniques such as interpolation and least squares methods.

Advanced Computing Sep 17 2021 This proceedings volume collects review articles that summarize research conducted at the Munich Centre of Advanced Computing (MAC) from 2008 to 2012. The articles address the increasing gap between what should be possible in Computational Science and Engineering due to recent advances in algorithms, hardware, and networks, and what can actually be achieved in practice; they also examine novel computing architectures,

where computation itself is a multifaceted process, with hardware awareness or ubiquitous parallelism due to many-core systems being just two of the challenges faced. Topics cover both the methodological aspects of advanced computing (algorithms, parallel computing, data exploration, software engineering) and cutting-edge applications from the fields of chemistry, the geosciences, civil and mechanical engineering, etc., reflecting the highly interdisciplinary nature of the Munich Centre of Advanced Computing.

The History of Visual Magic in Computers Aug 29 2022 If you have ever looked at a fantastic adventure or science fiction movie, or an amazingly complex and rich computer game, or a TV commercial where cars or gas pumps or biscuits behaved liked people and wondered, “How do they do that?”, then you’ve experienced the magic of 3D worlds generated by a computer. 3D in computers began as a way to represent automotive designs and illustrate the construction of molecules. 3D graphics use evolved to visualizations of simulated data and artistic representations of imaginary worlds. In order to overcome the processing limitations of the computer, graphics had to exploit the characteristics of the eye and brain, and develop visual tricks to simulate realism. The goal is to create graphics images that will overcome the visual cues that cause disbelief and tell the viewer this is not real. Thousands of people over thousands of years have developed the building blocks and made the discoveries in mathematics and science to make such 3D magic possible, and The History of Visual Magic in Computers is dedicated to all of them and tells a little of their story. It traces the earliest understanding of 3D and then foundational mathematics to explain and construct 3D; from mechanical computers up to today’s tablets. Several of the amazing computer graphics algorithms and tricks came of periods where eruptions of new ideas and techniques seem to occur all at once. Applications emerged as the fundamentals of how to draw lines and create realistic images were better understood, leading to hardware 3D controllers that drive the display all the way to stereovision and virtual reality.

Computational Science – ICCS 2019 Jan 22 2022 The five-volume set LNCS 11536, 11537, 11538, 11539, and 11540 constitutes the proceedings of the 19th International Conference on Computational Science, ICCS 2019, held in Faro, Portugal, in June 2019. The total of 65 full papers and 168 workshop papers presented in this book set were carefully reviewed and selected from 573 submissions (228 submissions to the main track and 345 submissions to the workshops). The papers were organized in topical sections named: Part I: ICCS Main Track Part II: ICCS Main Track; Track of Advances in High-Performance Computational Earth Sciences: Applications and Frameworks; Track of Agent-Based Simulations, Adaptive Algorithms and Solvers; Track of Applications of Matrix Methods in Artificial Intelligence and Machine Learning; Track of Architecture, Languages, Compilation and Hardware Support for Emerging and Heterogeneous Systems Part III: Track of Biomedical and Bioinformatics Challenges for Computer Science; Track of Classifier Learning from Difficult Data; Track of Computational Finance and Business Intelligence; Track of Computational Optimization, Modelling and Simulation; Track of Computational Science in IoT and Smart Systems Part IV: Track of Data-Driven Computational Sciences; Track of Machine Learning and Data Assimilation for Dynamical Systems; Track of Marine Computing in the Interconnected World for the Benefit of the Society; Track of Multiscale Modelling and Simulation; Track of Simulations of Flow and Transport: Modeling, Algorithms and Computation Part V: Track of Smart Systems: Computer Vision, Sensor Networks and Machine Learning; Track of Solving Problems with Uncertainties; Track of Teaching Computational Science; Poster Track ICCS 2019 Chapter “Comparing Domain-decomposition Methods for the Parallelization of Distributed Land Surface Models” is available open access under a Creative Commons Attribution 4.0 International License via link.springer.com.

Complete Maya Programming Sep 05 2020 "David Gould is an expert at using, programming, and teaching Maya, and it shows. People who need to program Maya will find this book essential. Even Maya users who don't intend to do extensive programming should read this book for a better understanding of what's going on under the hood. Compact yet thorough, it covers both MEL and the C++ API, and is written to be informative for both novice and expert programmers. Highly recommended!" -Larry Gritz, Exluna/NVIDIA, co-author of Advanced RenderMan: Creating CGI for Motion Pictures "This book should be required reading for all Maya programmers, novice and expert alike. For the novice, it provides a thorough and wonderfully well thought-out hands-on tutorial and introduction to Maya. The book's greatest contribution, however, is that in it David shares his deep understanding of Maya's fundamental concepts and architecture, so that even the expert can learn to more effectively exploit Maya's rich and powerful programming interfaces." -Philip J. Schneider, Disney

Feature Animation, co-author of Geometric Tools for Computer Graphics "Having provided a technical review of David Gould's Complete Maya Programming, I must say that this book is the definitive text for scripting and plug-in development for Maya. Never before has there been such a concise and clearly written guide to programming for Maya. Any user smart enough to pick up this book would be better off for it." -Chris Rock, a Technical Director at "a Large Animation Studio in Northern California" "If you ever wanted to open the Maya toolbox, this is your guide. With clear step-by-step instructions, you will soon be able to customize and improve the application, as well as create your own extensions, either through the MEL scripting language or the full C++ API." -Christophe Hery, Industrial Light & Magic Learning Maya, the world's leading 3D animation and effects package, is a challenge, especially for those who want to master Maya's versatile programming features in addition to its built-in tools. Finally, here is a practical, step-by-step guide that shows how to use Maya to its fullest potential, beginning with the basics. Readers of Complete Maya Programming will first gain a thorough understanding of Maya's inner workings, and then learn how to customize and extend Maya with scripts and plugins that take control and productivity to new levels. Users new to programming can apply Maya's easy scripting language MEL (Maya Embedded Language), while more advanced users can work with the C++ API (Application Progamming Interface). Both a fundamental tutorial for Maya beginners and a solid reference for experienced developers, Complete Maya Programming is every user's guide to Maya mastery. FEATURES: *Demonstrates how to use MEL to control Maya, customize its interface, automate procedures, and more *Details how to use the C++ API to modify Maya functionality and develop tools and features to meet any need *Explains when to use MEL, when to use the C++ API, and how to use them together *Provides a multitude of real-world examples illustrating applications of Maya programming *Ideal for technical directors, developers, or anyone wishing to master Maya *Provides a storehouse of MEL scripts and C++ source code, glossary, and list of resources, available at www.davidgould.com