Digital Modeling Digital

The two-volume set LNCS 10286 + 10287 constitutes the refereed proceedings of the 8th International Conference on Digital Human Modeling and Applications in Health, Safety, Ergonomics, and Risk Management, DHM 2017, held as part of HCI International 2017 in Vancouver, BC, Canada. HCII 2017 received a total of 4340 submissions, of which 1228 papers were accepted for publication after a careful reviewing process. The 75 papers presented in these volumes were organized in topical sections as follows: Part I: anthropometry, ergonomics, design and comfort; human body and motion modelling; smart human-centered service system design; and human-robot interaction. Part II: clinical and health information systems; health and aging; health data analytics and visualization; and design for safety.

By presenting the conditions, methods and techniques of monetisation of business models in the digital economy, this book combines implementation of the theoretical aspects of monetisation with the presentation of practical business solutions in this field. The scope of the book includes the relationship between the monetisation and scalability degree of business models. The book describes the place and role of the digital business ecosystem in the process of digital transformation. It demonstrates ideological and functional conditions for the use of the concept of sharing to design innovative business models while also presenting a multi-dimensional approach to the use of Big Data and their monetisation in the context of business models. Digital Business Models shows the place and role of ecological and social factors in building digital business models that are part of the concept of the circular economy and presents the contemporary conditions of a sustainability concept that meets the ethical challenges of doing digital business. It demonstrates how important the social factors of business model design and the creation of social value are in modern business and demonstrates. The book explores the servitisation of digital business models using digital technologies and features case studies on the effective solutions of business models that use servitisation as a factor supporting the monetisation of business models. Written for scholars exploring the efficiency and effectiveness of business models related to contemporary concepts – Sharing Economy, Circular Economy, Network Economy, Big Data, so on – and those designing business models taking into account social aspects, it will also be of direct interest to entrepreneurship courses.

This book is thematically positioned at the intersections of Urban Design, Architecture, Civil Engineering and Computer Science, and it has the goal to provide specialists coming from respective fields a multi-angle overview of state-of-the-art work currently being carried out. It addresses both newcomers who wish to obtain more knowledge about this growing area of interest, as well as established researchers and practitioners who want to keep up to date. In terms of organization, the volume starts out with chapters looking at the domain at a wide-angle and then moves focus towards technical viewpoints and approaches.

"Social Simulation for a Digital Society" provides a cross-section of state-of-the-art research in social simulation and computational social science. With the availability of big data and faster computing power, the social sciences are undergoing a tremendous transformation. Research in computational social sciences has received considerable attention in the last few years, with advances in a wide range of methodologies and applications. Areas of application of computational methods range from the study of opinion and information dynamics in social networks, the formal modeling of resource use, the study of social conflict and cooperation to the development of cognitive models for social simulation and many more. This volume is based on the Social Simulation Conference of 2017 in Dublin and includes applications from across the social sciences, providing the reader with a demonstration of the highly versatile research in social simulation, with a particular focus on public policy relevance in a digital society. Chapters in the book include contributions to the methodology of simulation-based research, theoretical and philosophical considerations, as well as applied work. This book will appeal to students and researchers in the field.

Computer graphics systems are capable of generating stunningly realistic images of objects that have never physically existed. In order for computers to create these accurately detailed images, digital models of appearance must include robust data to give viewers a credible visual impression of the depicted materials. In particular, digital models demonstrating the nuances of how materials interact with light are essential to this capability. Digital Modeling of Material Appearance is the first comprehensive work on the digital modeling of material appearance: it explains how models from physics and engineering are combined with keen observation skills for use in computer graphics rendering. Written by the foremost experts in appearance modeling and rendering, this book is for practitioners who want a general framework for understanding material modeling tools, and also for researchers pursuing the development of new modeling techniques. The text is not a "how to" guide for a particular software system. Instead, it provides a thorough discussion of foundations and detailed coverage of key advances. Practitioners and researchers in applications such as architecture, theater, product development, cultural heritage documentation, visual simulation and training, as well as traditional digital application areas such as feature film, television, and computer games, will benefit from this much needed resource.

ABOUT THE AUTHORS Julie Dorsey and Holly Rushmeier are professors in the Computer Science Department at Yale University and co-directors of the Yale Computer Graphics Group. François Sillion is a senior researcher with INRIA (Institut National de Recherche en Informatique et Automatique), and director of its Grenoble Rhône-Alpes research center. First comprehensive treatment of the digital modeling of material appearance Provides a foundation for modeling appearance, based on the physics of how light interacts with materials, how people perceive appearance, and the implications of rendering appearance on a digital computer An invaluable, one-stop resource for practitioners and researchers in a variety of fields dealing with the digital modeling of material appearance

Innovations and developments in technology have laid the foundations for an economy based on digital goods and services the digital economy. This book invites students and practitioners, to take an in-depth look at the impact that

technological innovations such as social media, cryptocurrencies, crowdsourcing, and even online gaming is having on today's business landscape. Learn about the various business models available for the digital economy, including the business models used by Bitcoin, Spotify, Wikipedia, World of Warcraft, Facebook, and Airbnb. This book details the evolution of contemporary economics within the digital stratosphere and highlights the complex ecosystem that makes up the field of digital economics. The foundational text with case studies is also peppered with anecdotes on the various technological innovations which have shaped markets throughout history. The authors provide several models and tools that are essential for analysis, as well as activities that will allow the reader to reflect, analyze, and apply the knowledge and tools presented in each chapter. Introduction to Digital Economics is a definitive guide to the complexities and nuances of this burgeoning and fascinating field of study.

This book provides readers with a timely snapshot of modeling and simulation tools, including virtual and mixed-reality environment, for human factors research. It covers applications in healthcare and physical ergonomics, military and transportation systems, industrial monitoring, as well as economics and social sciences. Based on the AHFE 2021 International Conference on Human Factors and Simulation and the AHFE 2021 International Conference on Digital Human Modeling and Applied Optimization, held virtually on 25–29 July, 2021, from USA, the book offers a unique resource for modelling and simulation researchers seeking insights into human factors research and to human factors experts seeking reliable computational tools.

?This Springer Briefs volume guides the reader in a comprehensive form to design new digital business models. The book provides strategic roadmaps for enterprises in the digital world, and a comprehensive framework to assess new business models. It aligns both, research and a practical perspective through real case study examples. Even extreme scenarios are employed to ensure that innovative approaches are being considered adequately.

The main thrust is to provide students with a solid understanding of a number of important and related advanced topics in digital signal processing such as Wiener filters, power spectrum estimation, signal modeling and adaptive filtering. Scores of worked examples illustrate fine points, compare techniques and algorithms and facilitate comprehension of fundamental concepts. The book also features an abundance of interesting and challenging problems at the end of every chapter.· Background· Discrete-Time Random Processes· Signal Modeling· The Levinson Recursion· Lattice Filters· Wiener Filtering· Spectrum Estimation· Adaptive Filtering

Professional modeling is the foundation of every aspect of the 3D production pipeline and is essential to the success of any 3D computer graphics project. [digital] Modeling is unlike any other modeling book you've seen—it gets to the core of what it takes to create efficient production-ready models and demystifies the process of producing realistic and jaw-dropping graphics. Taking a software-neutral approach, it teaches you the essential skills and concepts that you can apply to modeling in any industry 3D software, such as 3ds Max, LightWave 3D, Maya, Modo, Silo, XSI, ZBrush and other leading programs. Modelers, animators, texture artists, and technical directors can all benefit from the valuable information covered in this jam-packed guide containing years of industry knowledge. Simply put, if you work in 3D, you must have this book. In this inspiring and informative guide to modeling, industry veteran William Vaughan teaches you how to: Master modeling techniques to produce professional results in any 3D application Use the tools of a professional digital modeler Control your models polygon-count as well as polygon-flow Create both organic and hard surface models Understand a modeler's role in a production environment Gain the knowledge to land a job in the industry as a digital modeler Model using specific tools such as LightWave and 3ds Max in over 6 hours of video training in the accompanying downloadable lesson files (see below for details) And much more! All of Peachpit's eBooks contain the same content as the print edition. You will find a link in the last few pages of your eBook that directs you to the media files. Helpful tips: If you are able to search the book, search for "Where are the lesson files?" Go to the very last page of the book and scroll backwards. You will need a web-enabled device or computer in order to access the media files that accompany this ebook. Entering the URL supplied into a computer with web access will allow you to get to the files. Depending on your device, it is possible that your display settings will cut off part of the URL. To make sure this is not the case, try reducing your font size and turning your device to a landscape view. This should cause the full URL to appear.

Emphasizing the detailed design of various Verilog projects, Verilog HDL: Digital Design and Modeling offers students a firm foundation on the subject matter. The textbook presents the complete Verilog language by describing different modeling constructs supported by Verilog and by providing numerous design examples and problems in each chapter. Examples include counters of different moduli, half adders, full adders, a carry lookahead adder, array multipliers, different types of Moore and Mealy machines, and much more. The text also contains information on synchronous and asynchronous sequential machines, including pulse-mode asynchronous sequential machines. In addition, it provides descriptions of the design module, the test bench module, the outputs obtained from the simulator, and the waveforms obtained from the simulator illustrating the complete functional operation of the design. Where applicable, a detailed review of the topic's theory is presented together with logic design principles, including state diagrams, Karnaugh maps, equations, and the logic diagram. Verilog HDL: Digital Design and Modeling is a comprehensive, self-contained, and inclusive textbook that carries all designs through to completion, preparing students to thoroughly understand this popular hardware description language.

What is your digital business model? While many leaders of companies recognize the threat from digital--and the potential opportunity--they lack a common language or a compelling framework to help them assess it and, more importantly, to direct them. They don't know how to think about their digital business model. In this probing and practical book, Peter Weill and Stephanie Woerner provide much-needed tools, self-assessments, motivating examples, and key financial analyses of where the profits will likely be made. Based on five years of study at the MIT Center for Information Systems Research, the book provides a powerful yet simple framework that has been field-tested globally with more than a dozen senior management teams. The authors found that digitization is moving companies' business models on two dimensions: from value chains to digital ecosystems, and from a fuzzy understanding of the needs of end customers to a sharper one. Looking at these dimensions in combination results in four distinct business models, each with different capabilities: (1) Supplier, (2) Omni-channel, (3) Modular Producer, and (4) Ecosystem Driver. The framework helps companies clarify where they are currently in an increasingly digital business landscape and highlights what's needed to move toward another, higher-value digital business model. In meeting the growing challenge to "go digital," this smart book will help you grapple with the threats, respond to the opportunities, and create winning digital strategies.

Bridges traditional and contemporary methods of creating architectural design drawings and 3D models through digital

tools and computational processes. Drawing from the Model: Fundamentals of Digital Drawing, 3D Modeling, and Visual Programming in Architectural Design presents architectural design students, educators, and professionals with a broad overview of traditional and contemporary architectural representation methods. The book offers insights into developments in computing in relation to architectural drawing and modeling, by addressing historical analog methods of architectural drawing based on descriptive geometry and projection, and transitioning to contemporary digital methods based on computational processes and emerging technologies. Drawing from the Model offers digital tools, techniques, and workflows for producing architectural design drawings (plans, sections, elevations, axonometrics, and perspectives), using contemporary 2D drawing and 3D modeling design software. Visual programming is introduced to address topics of parametric modeling, algorithmic design, computational simulations, physical computing, and robotics. The book focuses on digital design software used in higher education and industry, including Robert McNeel & Associates Rhinoceros® (Rhino 6 for Windows), Grasshopper®, Adobe Illustrator® CC, and Arduino, and features an appendix filled with 10 design drawing and 3D modeling exercises intended as educational and pedagogical examples for readers to practice and/or teach workflows that are addresses in the book. Bridges analog hand-drawing and digital design drawing techniques Provides comprehensive coverage of architectural representation, computing, computer-aided drafting, and 3D modeling tools, techniques, and workflows, for contemporary architectural design drawing aesthetics and graphics. Introduces topics of parametric modeling, algorithmic design, computational simulation, physical computing, and robotics through visual programming environments and processes. Features tutorial-based instruction using the latest versions of Rhinoceros® (Rhino 6 for Windows), Grasshopper®, Adobe Illustrator® CC, and Arduino.

Application of the digital modeling method in the design of digital computer circuits is proposed for calculation of the probabilities of reductions and multiplicity factors of errors with parallel data input. The use of the method for constant perturbation is explained by way of example of a trigger on semiconductor triodes. The advantages of the method in comparison with analysis of the performance of circuits under the influence of a set of interference sources are examined. (Author).

Build your own digital twin in no time! Key Features Build and design simple to complex dDigital Ttwins solutions Create end-to-end solutions with Azure Digital Twins Integrate the Azure Digital Twins service with other Azure services to provide even richer solutions Book Description In today's world, clients are using more and more IoT sensors to monitor their business processes and assets. Think about collecting information like pressure from an engine to the temperature and light switch being turned on or off in a room. The data collected can be used to create smart solutions for predicting future trends, creating simulations, and drawing insights using visualization. This makes it beneficial for organizations to make digital twins, which are digital replicas of the real environment, to support these smart solutions. This book will help you understand the concept of a digital twin and how this can be implemented using an Azure service called Azure Digital Twins. Starting with the requirements and installation of the Azure Digital Twins service, the book will explain the definition language used for modeling digital twins. From there, you'll go through each step of building digital twins using Azure Digital Twins and learn about the different SDKs and APIs and how to use them with several Azure services. Finally, you'll understand how digital twins can be used in practice with the help of several real-world scenarios. By the end of this digital twin book, you'll be confident in building and designing digital twins and integrating them with various Azure services. What you will learn Understand the concept and architecture of Azure Digital Twins Get to grips with installing and configuring the service and required tools Understand the Digital Twin Definition Language (DTDL) and digital twin models Explore the APIs and SDKs available to access the Azure Digital Twins services Monitor, troubleshoot, and secure Digital Twins Discover how to build, design, and integrate applications with various Azure services Explore real-life scenarios of the applicability of Azure Digital Twins Who This Book Is For This book is for Azure developers, Azure architects, and anyone who wants to learn more about how to implement IoT solutions using Azure Digital Twins and additional Azure services. Prior experience using the Azure Portal and a clear understanding of building applications using .NET would be helpful. Table of Contents About Digital Twins Requirements and installation Digital Twin Definition Model Understanding Models Model Elements Creating Relationships between Azure Digital Twin Models Query Digital Twins Building Models Using Ontologies APIs and SDKs Building a Digital Twin Pipeline Updating the Model Data Egress Setting Up Azure Maps Monitor and Troubleshoot Security and Continuity Smart Building Insights of a Facility Simulation

This software will enable the user to learn about modelling digital dinosaurs.

Architecture in the Digital Age addresses contemporary architectural practice in which digital technologies are radically changing how buildings are conceived, designed and produced. It discusses the digitally-driven changes, their origins, and their effects by grounding them in actual practices already taking place, while simultaneously speculating about their wider implications for the future. The book offers a diverse set of ideas as to what is relevant today and what will be relevant tomorrow for emerging architectural practices of the digital age.

Landscape Architecture and Digital Technologies explores how digital technologies are reshaping design and making in landscape architecture. While the potentials of digital technologies are well documented within landscape planning and visualisation, their application within design practice is far less understood. This book highlights the role of the digital model in encouraging a new design logic that moves from the privileging of the visual to a focus on processes of formation, bridging the interface of the conceptual and material, the virtual and the physical. Drawing on interviews and projects from a range of international designers -including , Snøhetta, Arup, Gustafson Porter, ASPECT Studios, Grant Associates, Catherine Mosbach, Philippe Rahm, PARKKIM, LAAC and PEG office of landscape + architecture among others, the authors explore the influence of parametric modelling, scripting, real-time data, simulation, prototyping, fabrication, and Building Information Modelling on the design and construction of contemporary landscapes. This

engagement with practice is expanded through critical reflection from academics involved in landscape architecture programs around the world that are reshaping their research and pedagogy to reflect an expanded digital realm. Crossing critical theory, technology and contemporary design, the book constructs a picture of an emerging twenty-first century practice of landscape architecture practice premised on complexity and performance. It also highlights the disciplinary demands and challenges in engaging with a rapidly evolving digital context within practice and education. The book is of immense value to professionals and researchers, and is a key publication for digital landscape courses at all levels.

Learn how to use Autodesk Fusion 360 to digitally model your own original projects for a 3D printer or a CNC device. Fusion 360 software lets you design, analyze, and print your ideas. Free to students and small businesses alike, it offers solid, surface, organic, direct, and parametric modeling capabilities. Fusion 360 for Makers is written for beginners to 3D modeling software by an experienced teacher. It will get you up and running quickly with the goal of creating models for 3D printing and CNC fabrication. Inside Fusion 360 for Makers, you'll find: Eight easy-to-understand tutorials that provide a solid foundation in Fusion 360 fundamentals DIY projects that are explained with step-by-step instructions and color photos Projects that have been real-world tested, covering the most common problems and solutions Stand-alone projects, allowing you to skip to ones of interest without having to work through all the preceding projects first Design from scratch or edit downloaded designs. Fusion 360 is an appropriate tool for beginners and experienced makers.

The emerging information technologies have enabled new human patterns ranging from physiological interactions to psychological interactions. Perhaps the best example is the rapid 'evolution' of our thumbs from simply holding to controlling mobile devices in just a few years recently. Taking the medical field as an example, the fast-growing technologies such as pill cameras, implantable devices, robotic surgeries, and virtual reality training methods will change the way we live and work. Human Algorithms aim to model human forms, interactions, and dynamics in this new context. Human Algorithms are engineering methods that are beyond theories. They intend to push the envelopes of multi-physics, sensing, and virtual technologies to the limit. They have become more comprehensive and inexpensive for use in real-world designs: inside monitors, connected to networks, and under the patient's skin. This book aims to reflect the state of the art of Human Algorithms. It is a survey of innovative ideas for readers who may be new to this field. The targeted groups include college students, researchers, engineers, designers, scientists, managers, and healthcare professionals. The 11 chapters are divided into three parts: Human Dynamics, Virtual Humans, and Human Forms. Part I: Human Dynamics. In the first chapter "Implantable Computing," Warwick and Gasson present an overview of the latest developments in the field of Brain to Computer Interfacing. They describe human experimentation in which neural implants have linked the human nervous system bi-directionally with technological devices and the Internet. In the chapter "Brainwave-Based Imagery Analysis," Cowell et al.

An in-depth examination of the concept of value in a digital world, an analysis of a range of digital business models and a framework for assessing the value of digital businesses. Assessing the value of traditional business was easy. There are hard, well tested metrics and tangible, measurable assets you can literally kick the tyres of. But how do you measure the value of something that consists of little more than bits of information, brand awareness and a compelling idea? In the winner takes all digital world how do you know if this idea is one that will attract billions of dedicated users or a few thousand fleeting trialists? And, most importantly, how do you assess whether any given business model is robust enough to make billions or flawed in a way that will lose millions? Lopez Lubian and Esteves look at what economic value means in a digital world, and argue for a shift from traditional value metrics to digital value metrics. Through high profile case studies they examine the process of valuation in the digital world – examining the challenges of making objective judgments from subjective information and how to assess the value of data. Next they analyse in depth a number of different digital business models from the perspective of delivering value to investors, stakeholders and society at large. Finally they present a framework model for assessing value in digital business.

This book explores various digital representation strategies that could change the future of wooden architectures by blending tradition and innovation. Composed of 61 chapters, written by 153 authors hailing from 5 continents, 24 countries and 69 research centers, it addresses advanced digital modeling, with a particular focus on solutions involving generative models and dynamic value, inherent to the relation between knowing how to draw and how to build. Thanks to the potential of computing, areas like parametric design and digital manufacturing are opening exciting new avenues for the future of construction. The book's chapters are divided into five sections that connect digital wood design to integrated approaches and generative design; to model synthesis and morphological comprehension; to lessons learned from nature and material explorations; to constructive wisdom and implementation-related challenges; and to parametric transfigurations and morphological optimizations.

"An exhibition studying the link between physical and digital models in the design process. In this, the final volume of the Homo Faber triology on architectural models, the focus of the work is power of digital modelling and the digitally controlled model making. This volume, which includes interviews with a range of Australasian architectural and design practices, investigates the impact of affordable digital manufacturing and modelling tools on the design process. The words "post-digital' in the title are used to describe the present state in the design professions where digital and computer models are so ubiquitous that they are no longer a novelty and, for the first time, might begin to be critically assessed for their strengths and weaknesses." -- Book jacket.

This book discusses the opportunities and conditions that digital technology provides to extend, innovate and differentiate the services offered by consulting companies. It introduces suitable artefacts like web-based consulting platforms, consulting applications, semantic technologies and tools for data mining and collaboration. Furthermore it examines concepts to evaluate the virtualization of consulting processes and showcases how solutions can be developed to blend traditional and digital consulting models. Presenting state-of-the-art research and providing a comprehensive overview of the methods and techniques needed for digital transformation in the consulting industry, the book serves as both a guide and a roadmap for innovative consulting companies.

The spread of the Internet into all areas of business activities has put a particular focus on business models. The digitalization of business processes is the driver of changes in company strategies and management practices alike. This textbook provides a structured and conceptual approach, allowing students and other readers to understand the commonalities and specifics of the respective business models. The book begins with an overview of the business model concept in general by presenting the development of business models, analyzing definitions of business models and discussing the significance of the success of business model management. In turn, Chapter 2 offers insights into and

explanations of the business model concept and provides the underlying approaches and ideas behind business models. Building on these foundations, Chapter 3 outlines the fundamental aspects of the digital economy. In the following chapters the book examines various core models in the business to consumer (B2C) context. The chapters follow a 4-C approach that divides the digital B2C businesses into models focusing on content, commerce, context and connection. Each chapter describes one of the four models and provides information on the respective business model types, the value chain, core assets and competencies as well as a case study. Based on the example of Google, Chapter 8 merges these approaches and describes the development of a hybrid digital business model. Chapter 9 is dedicated to business-to-business (B2B) digital business models. It shows how companies focus on business solutions such as online provision of sourcing, sales, supportive collaboration and broker services. Chapter 10 shares insight into the innovation aspect of digital business models, presenting structures and processes of digital business model innovation. The book is rounded out by a comprehensive case study on Google/Alphabet that combines all aspects of digital business models. Conceived as a textbook for students in advanced undergraduate courses, the book will also be useful for professionals and practitioners involved in business model innovation, and applied researchers.

This book derives and discusses the current state of the art in physical modelling of musical instruments for real-time sound synthesis. It includes the derivation of mathematical models in the form of partial differential equations for the vibrational description of strings, membranes/plates, and resonant bodies. Their solution and simulation is first described by classical methods, including finite difference method, digital waveguide method, and modal synthesis method. The focus of this book is on the new functional transformation method, providing an analytical solution to the underlying mathematical model. With its large number of examples, illustrations and comparisons to other modelling techniques, this book is an excellent reference for graduate courses on sound synthesis techniques, as well as a reference for researchers in acoustics, mechanics, operational mathematics, and electrical engineering.

The democratization of 3D printing technology is changing the way we build and share physical prototypes. As desktop 3D printers have become affordable and accessible, makers and hobbyists are able to download a digital design online and fabricate a physical model at home with low cost. Although replicating an existing design is straightforward, creating and prototyping a model from scratch is still a challenging task for the majority of people. One existing challenge for prototyping 3D models is the long delay between creating a 3D digital model to having the physical instantiation at hand. The gap between the 3D design and fabrication makes it difficult for the user to contextualize the 3D digital model in the real physical environment. The user has no physical feedback at the early design stage, and a small mistake in the digital model can lead to a significant delay in the design iteration cycle. In this dissertation, we explore an alternative design-fabrication pipeline, where design and fabrication happen in-parallel. We build three working prototypes to demonstrate that the new design-fabrication workflow can offer users fast feedback during the early design activity and can promote a reflective design experience. The D-Coil prototype offers a fully hands-on physical building experience for 3D digital modeling. It targets novice, requires no CAD experience, and can offer immediate physical feedback. On-the-Fly Print targets CAD modelers. It offers CAD modelers a way to quickly access physical prints of a model while it is designed on the screen. The fast physical feedback can allow the designer to compare the model to the real physical environment, even before the digital design is finished. RoMA combines the advantages of both D-Coil and On-the-Fly Print. With RoMA, the designer is located next to a robotic 3D printer. Design and fabrication happen in the same place and at the same time. The designer can design in-situ, and use partially printed physical model to support the next design step. A user study of RoMA confirms that the early physical feedback and the in-parallel design-fabrication concept can promote a reflective design activity and offer a better early 3D modeling experience. The thesis concludes with a discussion of the benefits and drawbacks of the proposed design-fabrication workflow and its design implications for future fabrication system design.