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ECGBL 2020 14th European Conference on Game-Based Learning Panagiotis Fotaris 2020-09-24 These proceedings represent the work of contributors to the 14th European Conference on Games Based Learning (ECGBL 2020), hosted by The University of Brighton on 24-25 September 2020. The Conference Chair is Panagiotis Fotaris and the Programme Chairs are Dr Katie Piatt and Dr Cate Grundy, all from University of Brighton, UK.

Advanced Methodologies and Technologies in Network Architecture, Mobile Computing, and Data Analytics Khosrow-Pour, D.B.A., Mehdi 2018-10-19 From cloud computing to data analytics, society stores vast supplies of information through wireless networks and mobile computing. As organizations are becoming increasingly more wireless, ensuring the security and seamless function of electronic gadgets while creating a strong network is imperative. Advanced Methodologies and Technologies in Network Architecture, Mobile Computing, and Data Analytics highlights the challenges associated with creating a strong network architecture in a perpetually online society. Readers will learn various methods in building a seamless mobile computing option and the most effective means of analyzing big data. This book is an important resource for information technology professionals, software developers, data analysts, graduate-level students, researchers, computer engineers, and IT specialists seeking modern information on emerging methods in data mining, information technology, and wireless networks.

Einführung in die Berufs- und Wirtschaftspädagogik Karl Wilbers 2020 Das Lehrbuch richtet sich an Anfängerinnen und Anfänger eines berufs- und wirtschaftspädagogischen Studiengangs mit kaufmännischem oder gewerblich-technischem Schwerpunkt.

Cognitive and Affective Perspectives on Immersive Technology in Education Zheng, Robert Z. 2020-05-22 Immersive technology as an umbrella concept consists of multiple emerging technologies including augmented reality (AR), virtual reality (VR), gaming, simulation, and 3D printing. Research has shown immersive technology provides unique learning opportunities for experiential learning, multiple perspectives, and knowledge transfer. Due to its role in influencing learners' cognitive and affective processes, it is shown to have great potential in changing the educational landscape in the decades to come. However, there is a lack of general cognitive and affective theoretical framework to guide the diverse aspects of immersive technology research. In fact, lacking the cognitive and affective theoretical framework has begun to hamper the design and application of immersive technology in schools and related professional training. Cognitive and Affective Perspectives on Immersive Technology in Education is an essential research book that explores methods and implications for the design and implementation of upcoming immersive technologies in pedagogical and professional development settings. The book includes case studies that highlight the cognitive and affective processes in immersive technology as well as the successful applications of immersive technology in education. Featuring a wide range of topics such as curriculum design, K-12 education, and mobile learning, this book is ideal for academicians, educators, policymakers, curriculum developers, instructional designers, administrators, researchers, and students.

Virtual and Augmented Reality: Concepts, Methodologies, Tools, and Applications Management Association, Information Resources 2018-03-02 Virtual and augmented reality is the next frontier of technological innovation. As technology exponentially evolves, so do the ways in which humans interact and depend upon it. Virtual and Augmented Reality: Concepts, Methodologies, Tools, and Applications is a comprehensive reference source for the latest scholarly material on the trends, techniques, and uses of virtual and augmented reality in various fields, and examines the benefits and challenges of these developments. Highlighting a range of pertinent topics, such as human-computer interaction, digital self-identity, and virtual reconstruction, this multi-volume book is ideally designed for researchers, academics, professionals, theorists,

students, and practitioners interested in emerging technology applications across the digital plane.

Virtual Reality in Education: Breakthroughs in Research and Practice Management Association, Information Resources 2019-04-01 Modern technology has infiltrated many facets of society, including educational environments. Through the use of virtual learning, educational systems can become more efficient at teaching the student population and break down cost and distance barriers to reach populations that traditionally could not afford a good education. Virtual Reality in Education: Breakthroughs in Research and Practice is an essential reference source on the uses of virtual reality in K-12 and higher education classrooms with a focus on pedagogical and instructional outcomes and strategies. Highlighting a range of pertinent topics such as immersive virtual learning environments, virtual laboratories, and distance education, this publication is an ideal reference source for pre-service and in-service teachers, school administrators, principles, higher education faculty, K-12 instructors, policymakers, and researchers interested in virtual reality incorporation in the classroom.

Visual Experiences Carla Viviana Coleman 2017-07-31 Visual Experiences: A Concise Guide to Digital Interface Design provides step-by-step examples to enable readers to create an interface, guiding them from sketching an idea to creating an interactive prototype. This creation of a visual experience is achieved in three steps: thought, design, and interaction. This book focuses on the visual experience of digital interface design from the initial idea to end-user prototype.

Unity 2020 Virtual Reality Projects Jonathan Linowes 2020-07-30 Explore the latest features of Unity and build VR experiences including first-person interactions, audio fireball games, 360-degree media, art gallery tours, and VR storytelling Key FeaturesDiscover step-by-step instructions and best practices to begin your VR development journeyExplore Unity features such as URP rendering, XR Interaction Toolkit, and ProBuilderBuild impressive VR-based apps and games that can be experienced using modern devices like Oculus Rift and Oculus QuestBook Description This third edition of the Unity Virtual Reality (VR) development guide is updated to cover the latest features of Unity 2019.4 or later versions - the leading platform for building VR games, applications, and immersive experiences for contemporary VR devices. Enhanced with more focus on growing components, such as Universal Render Pipeline (URP), extended reality (XR) plugins, the XR Interaction Toolkit package, and the latest VR devices, this edition will help you to get up to date with the current state of VR. With its practical and project-based approach, this book covers the specifics of virtual reality development in Unity. You'll learn how to build VR apps that can be experienced with modern devices from Oculus, VIVE, and others. This virtual reality book presents lighting and rendering strategies to help you build cutting-edge graphics, and explains URP and rendering concepts that will enable you to achieve realism

for your apps. You'll build real-world VR experiences using world space user interface canvases, locomotion and teleportation, 360-degree media, and timeline animation, as well as learn about important VR development concepts, best practices, and performance optimization and user experience strategies. By the end of this Unity book, you'll be fully equipped to use Unity to develop rich, interactive virtual reality experiences. What you will learnUnderstand the current state of virtual reality and VR consumer productsGet started with Unity by building a simple diorama scene using Unity Editor and imported assetsConfigure your Unity VR projects to run on VR platforms such as Oculus, SteamVR, and Windows immersive MRDesign and build a VR storytelling animation with a soundtrack and timelinesImplement an audio fireball game using game physics and particle systemsUse various software patterns to design Unity events and interactable componentsDiscover best practices for lighting, rendering, and post-processingWho this book is for Whether you're a non-programmer unfamiliar with 3D computer graphics or experienced in both but new to virtual reality, if you're interested in building your own VR games or applications, this Unity book is for you. Any experience in Unity will be useful but is not necessary.

Extended Reality in Practice Bernard Marr 2021-04-21 EXTENDED REALITY IN PRACTICE As one of the leading business trends today, extended reality (XR) promises to revolutionize the way consumers experience their encounters with brands and products of all kinds. Top brands from Pepsi and Uber to Boeing and the U.S. Army are creating immersive digital experiences that capture the interest and imaginations of their target markets. In Extended Reality in Practice: 100+ Amazing Ways Virtual, Augmented and Mixed Reality are Changing Business and Society, celebrated futurist, technologist, speaker, and author Bernard Marr delivers a robust and accessible explanation of how all kinds of firms are developing innovative XR solutions to business problems. You'll discover the new ways that companies are harnessing virtual, augmented, and mixed reality to improve consumers' perception of their brands. You'll also find out why there are likely to be no industries that will remain untouched by the use of XR, and why these technologies are popular across the commercial, governmental, and non-profit spectrums. Perfect for Chief Executive Officers, business owners, leaders, managers, and professionals working in business development, Extended Reality in Practice will also earn a place in the libraries of professionals working within innovation teams seeking an accessible resource on the possibilities and potential created by augmented, virtual, and mixed reality technologies. An insightful exploration of extended reality from a renowned thought leader, technologist, and futurist Extended Reality in Practice: 100+ Amazing Ways Virtual, Augmented and Mixed Reality are Changing Business and Society offers readers a front-row seat to one of the most exciting and impactful business trends to find traction in years. Celebrated futurist and author Bernard Marr walks you through the ins and outs of XR, or extended

reality, and how it promises to revolutionize everything from the experience of walking through an airport or shopping mall to grabbing a burger at a fast-food restaurant. Discover insightful and illuminating case studies from businesses and organizations in a variety of industries, including Burger King, BMW, Boeing, and the U.S. Army, and see how they're turning virtual, mixed, and augmented reality experiences into big wins for their stakeholders. You'll also find out about how XR can help businesses tackle the problems of lackluster engagement and lukewarm customer loyalty with reinvigorated consumer experiences. Ideal for executives, founders, business leaders and owners, and professionals of all sorts, Extended Reality in Practice is an indispensable guide to an indispensable new technology. The book is the leading resource for anyone seeking a one-stop reference for augmented, virtual, and mixed reality tech and their limitless potential for enterprise.

Getting Started with React VR John Gwinner 2017-11-30 Create amazing 360 and virtual reality content that runs directly in your browsers with JavaScript and React VR 2.0 About This Book A practical guide to developing virtual reality experiences targeting web and mobile browsers Create customized 3D graphics for your virtual reality experiences with Three.js Explore the ReactVR library to create objects that seem real and see how they move in the Virtual world Import free models into VR and include those in your code Who This Book Is For This book is for web developers who want to use their existing skill set of HTML, CSS, and JavaScript to create virtual reality experiences. What You Will Learn Use Blender 2.79 to make virtual reality objects for Web VR. Import free models into VR and how to include those in your code Build a Virtual Museum with interactive art pieces Create your first VR App and customizing it Build animations by procedurally changing an object's position, using timers and Animated APIs Incorporate React Native code and JavaScript code in your VR world In Detail This book takes you on a journey to create intuitive and interactive Virtual Reality experiences by creating your first VR application using React VR 2.0.0. It starts by getting you up to speed with Virtual Reality (VR) and React VR components. It teaches you what Virtual Reality (VR) really is, why it works, how to describe 3D objects, the installation of Node.js (version 9.2.0) and WebVR browser. You will learn 3D polygon modeling, texturing, animating virtual objects and adding sound to your VR world. You will also discover ways to extend React VR with new features and native Three.js. You will learn how to include existing high-performance web code into your VR app. This book will also take you through upgrading and publishing your app. By the end of this book, you'll have a deep knowledge of Virtual Reality and a full-fledged working VR app to add to your profile! Style and approach A step-by-step practical guide to help readers build their first VR application.

Mastering Oculus Rift Development Jack Donovan 2017-02-06 Explore the new frontier of virtual reality with the Oculus Rift and bring the VR revolution to your own projects About This Book Create immersive 3D games especially designed for the Oculus Rift platform Build complex realistic virtual reality (VR) games with the Unity Engine Create striking VR environments with advanced graphical techniques Who This Book Is For This book is for aspiring indie developers and VR enthusiasts who want to bring their ideas into virtual reality with a new platform that provides an unprecedented level of realism and immersion. What You Will Learn Increase immersion with 3D audio and intuitive interfaces Create group VR experiences using multi-player networking Design fun and engaging mechanics that utilize VR principles Explore the best ways to navigate and interact using the Oculus Rift Design intuitive ways to navigate and interact with scenes in VR Add stunning realism to a scene with three-dimensional audio Invent mechanics and features that take full advantage of VR hardware In Detail Virtual reality (VR) is changing the world of gaming and entertainment as we know it. VR headsets such as the Oculus Rift immerse players in a virtual world by tracking their head movements and simulating depth, giving them the feeling that they are actually present in the environment. We will first use the Oculus SDK in the book and will then move on to the widely popular Unity Engine, showing you how you can add that extra edge to your VR games using the power of Unity. In this book, you'll learn how to take advantage of this new medium by designing around each of its unique features. This book will demonstrate the Unity 5 game engine, one of most widely-used engines for VR development, and will take you through a comprehensive project that covers everything necessary to create and publish a complete VR experience for the Oculus Rift. You will also be able to identify the common perils and pitfalls of VR development to ensure that your audience has the most comfortable experience possible. By the end of the book, you will be able to create an advanced VR game for the Oculus Rift, and you'll have everything you need to bring your ideas into a new reality. Style and approach This book takes a step-by-step tutorial approach with illustrative examples to help you implement the projects on your own. The book lets you first get to grips with the Oculus SDK and then moves on to the Unity Engine to add realistic graphics and features in your games.

Human Factors in Simple and Complex Systems Robert W. Proctor 2018-01-02 Recently, there have been a number of advances in technology, including in mobile devices, globalization of companies, display technologies and healthcare, all of which require significant input and evaluation from human factors specialists. Accordingly, this textbook has been completely updated, with some chapters folded into other chapters and new chapters added where needed. The text continues to fill the need for a textbook that bridges the gap between the conceptual and empirical foundations of the field.

Student-focused Learning Darrel W. Staat 2020 This book gives educators a view into the kinds of methods to

use in the twenty-first century. Higher Education will need to make a transition from what is accepted practice today, to what will become successful methods in the near future. The new emphasis places the student in the center of the educational process.

AR and VR Using the WebXR API Rakesh Baruah 2020-12-01 Gain an in-depth knowledge in immersive web development to create augmented reality (AR) and virtual reality (VR) applications inside web browsers using WebXR API, WebGL, Three.js, and A-Frame. This project-based book will provide the practice and portfolio content to make the most of what the futures of spatial computing and immersive technology have to offer. Beginning with technical analysis of how web browsers function, the book covers programming languages such as WebGL, JavaScript, and HTML, with an eye on a complete understanding of the WebXR lifecycle. You'll then explore how contemporary web browsers work at the code level and see how to set up a local development server and use it with the Visual Studio Code IDE to create 3D animation in the WebGL programming language. With a familiarity of the web-rendering pipeline in place, you'll venture on to WebGL abstractions such as the Three.js JavaScript library and Mozilla's A-Frame XR Framework, which use WebXR to create high-end visual effects. In the final projects of the book, you'll create an augmented reality web session for an Android phone device, and create a VR scene in A-Frame (built on Three.js) to demo essential components of the WebXR API pertaining to user positioning and interaction. Game engines have become common-place for the creation of mixed reality content. However, developers not interested in learning entirely new workflows may be better suited to work within a medium almost universally open to all—the web; AR and VR Using the WebXR API will show you the way. What You'll Learn Master the creation of virtual reality and augmented reality features for web page Prepare to work as an immersive web developer with a portfolio of projects in sought-after technologies Review the fundamentals of writing shaders in WebGL Experience the unity between client, server, and cloud architecture as it applies to location-based AR Who This Book Is For Aspiring immersive web developers and developers already familiar with the fundamentals of web development who want to further explore topics such as spatial computing, computer vision, spatial anchors, and cloud-computing for multi-user social experiences.

The Immersive Classroom Jaime Donally 2020-11-03 Discover the possibilities of immersive technology to deepen student engagement; activate learning through hunts, breakouts and labs; and explore global collaboration. Our classrooms are full of individuals who learn in diverse ways, and educators need creative teaching approaches to enrich learning for struggling students. When applied effectively, immersive technology in teaching can target students' interests, provide flexibility for a range of skill levels and empower students' choice in their learning. The Immersive Classroom highlights the possibilities of immersive

technology to make a greater impact and reach all student populations. The book: Provides step-by step instructions for how to mix individual tools to create an ecosystem of immersive technology. Offers examples from leading educators who have implemented the tools and techniques discussed, giving readers easy-to-implement takeaways they can incorporate in their classrooms right away. Features robust case studies from leaders in the field as well as student examples of immersive technology to support the topics discussed. With this book, readers gain insights into customizing tools through app hacking and app smashing, and discover how pushing the use of augmented reality (AR) and virtual reality (VR) tools beyond their intended purpose can maximize their benefits, helping meet the needs of all students.

Einführung in die Berufs- und Wirtschaftspädagogik. 2. Auflage Karl Wilbers 2021-01-01 Das Lehrbuch (2. Auflage) richtet sich an Anfängerinnen und Anfänger eines berufs- und wirtschaftspädagogischen Studiengangs mit kaufmännischem oder gewerblich-technischem Schwerpunkt

Virtual Reality Don Rauf 2015-12-15 This book introduces readers to the captivating world of virtual reality (VR), which is being hailed as the next frontier in technological user experience. Major tech companies such as Facebook and Microsoft are investing millions, if not billions, in VR. Perfect for students interested in the STEM disciplines, this book teaches them what virtual reality is, how it goes beyond just gaming and is being applied to solving real-world problems by creating virtual environments for users. Finally, readers learn about the bright future of virtual reality.

Unity Virtual Reality Projects Jonathan Linowes 2018-05-24 Explore the latest features of Unity 2018 to create immersive VR projects for Oculus Rift, HTC Vive, Daydream and Gear VR Key Features A project-based guide to teach you how to develop immersive and fun VR applications using Unity 3D Build experiences with interactable objects, physics, UI, animations, C# scripting, and other Unity features Explore the world of VR by building experiences such as diorama, first-person characters, 360-degree projections, social VR, audio fireball game, and VR storytelling Book Description Unity has become the leading platform for building virtual reality games, applications, and experiences for this new generation of consumer VR devices. Unity Virtual Reality Projects walks you through a series of hands-on tutorials and in-depth discussions on using the Unity game engine to develop VR applications. With its practical and project-based approach, this book will get you up to speed with the specifics of VR development in Unity. You will learn how to use Unity to develop VR applications that can be experienced with devices such as Oculus, Daydream, and Vive. Among the many topics and projects, you will explore gaze-based versus hand-controller input, world space UI canvases, locomotion and teleportation, software design patterns, 360-degree media, timeline animation, and multiplayer networking. You will learn about the Unity 3D game engine via the interactive Unity Editor, and you will also

learn about C# programming. By the end of the book, you will be fully equipped to develop rich, interactive VR experiences using Unity. What you will learn Create 3D scenes with Unity and other 3D tools while learning about world space and scale Build and run VR applications for specific headsets, including Oculus, Vive, and Daydream Interact with virtual objects using eye gaze, hand controllers, and user input events Move around your VR scenes using locomotion and teleportation Implement an audio fireball game using physics and particle systems Implement an art gallery tour with teleportation and data info Design and build a VR storytelling animation with a soundtrack and timelines Create social VR experiences with Unity networking Who this book is for If you're a non-programmer unfamiliar with 3D computer graphics, or experienced in both but new to virtual reality, and are interested in building your own VR games or applications, then this book is for you. Any experience in Unity is an advantage.

Communication Technology Update and Fundamentals August E. Grant 2018-06-13 For three decades, Communication Technology Update and Fundamentals has set the standard as the single best resource for students and professionals looking to brush up on how communication technologies have developed, grown, and converged, as well as what's in store for the future. The secret to the longevity is simple—every two years, the book is completely rewritten to ensure that it contains the latest developments in mass media, computers, consumer electronics, networking, and telephony. Plus, the book includes the Fundamentals: the first five chapters explain the communication technology ecosystem, the history, structure, and regulations. The chapters are written by experts who provide snapshots of the state of each individual field. Together, these updates provide a broad overview of these industries, as well as the role communication technologies play in our everyday lives. In addition to substantial updates to each chapter, the 16th edition includes: First-ever chapters on Virtual/Augmented Reality and eSports. Updated user data in every chapter. Overview of industry structure, including recent and proposed mergers and acquisitions Suggestions on how to get a job working with the technologies discussed. The companion website, www.tfi.com/ctu, offers updated information on the technologies covered in this text, as well as links to other resources.

Virtual Reality Blueprints Charles Palmer 2018-02-27 Join the virtual reality revolution by creating immersive 3D games and applications with Cardboard VR, Gear VR, OculusVR, and HTC Vive Key Features Develop robust, immersive VR experiences that are easy on the eye. Code 3D games and applications using Unity 3D game engine. Learn the basic principles of virtual reality applications Book Description Are you new to virtual reality? Do you want to create exciting interactive VR applications? There's no need to be daunted by the thought of creating interactive VR applications, it's much easier than you think with this hands-on, project-based guide that will take you through VR development essentials for desktop and mobile-based games and

applications. Explore the three top platforms--Cardboard VR, Gear VR, and OculusVR --to design immersive experiences from scratch. You'll start by understanding the science-fiction roots of virtual reality and then build your first VR experience using Cardboard VR. You'll then delve into user interactions in virtual space for the Google Cardboard then move on to creating a virtual gallery with Gear VR. Then you will learn all about virtual movements, state machines, and spawning while you shoot zombies in the Oculus Rift headset. Next, you'll construct a Carnival Midway, complete with two common games to entertain players. Along the way, you will explore the best practices for VR development, review game design tips, discuss methods for combating motion sickness and identify alternate uses for VR applications What you will learn Use Unity assets to create object simulation. Implement simple touch controls in your application. Apply artificial intelligence to achieve player and character interaction. Add scripts for movement, tracking, grasping, and spawning. Create animated walkthroughs, use 360-degree media, and build engaging VR experiences. Deploy your games on multiple VR platforms. Who this book is for If you are a game developer and a VR enthusiast now looking to get stuck into the VR app development process by creating VR apps for different platforms, then this is the book for you. Familiarity with the Unity game engine and the C# language is key to getting the most from this book.

Virtual Reality and Its Application in Education Dragan Cvetković 2021-01-14 Virtual reality is a set of technologies that enables two-way communication, from computer to user and vice versa. In one direction, technologies are used to synthesize visual, auditory, tactile, and sometimes other sensory experiences in order to provide the illusion that practically non-existent things can be seen, heard, touched, or otherwise felt. In the other direction, technologies are used to adequately record human movements, sounds, or other potential input data that computers can process and use. This book contains six chapters that cover topics including definitions and principles of VR, devices, educational design principles for effective use of VR, technology education, and use of VR in technical and natural sciences.

Learning Virtual Reality Tony Parisi 2015-10-26 As virtual reality approaches mainstream consumer use, a vibrant development ecosystem has emerged in the past few years. This hands-on guide takes you through VR development essentials for desktop, mobile, and browser-based applications. You'll explore the three go-to platforms—OculusVR, Gear VR, and Cardboard VR—as well as several VR development environments, programming tools, and techniques. If you're an experienced programmer familiar with mobile development, this book will help you gain a working knowledge of VR development through clear and simple examples. Once you create a complete application in the final chapter, you'll have a jumpstart on the next major entertainment medium. Learn VR basics for UI design, 3D graphics, and stereo rendering Explore Unity3D,

the current development choice among game engines Create native applications for desktop computers with the Oculus Rift Develop mobile applications for Samsung's Gear VR with the Android and Oculus Mobile SDKs Build browser-based applications with the WebVR Javascript API and WebGL Create simple and affordable mobile apps for any smartphone with Google's Cardboard VR Bring everything together to build a 360-degree panoramic photo viewer

Unity Virtual Reality Projects Jonathan Linowes 2015-08-31 Explore the world of Virtual Reality by building immersive and fun VR projects using Unity 3DAbout This Book• Learn the basic principles of virtual reality applications and get to know how they differ from games and desktop apps• Build various types of VR experiences, including diorama, first-person characters, riding on rails, 360 degree projections, and social VR• A project-based guide that teaches you to use Unity to develop VR applications, which can be experienced with devices such as the Oculus Rift or Google CardboardWho This Book Is ForIf you're a non-programmer unfamiliar with 3D computer graphics, or experienced in both but new to virtual reality, and are interested in building your own VR games or applications then this book is for you. Any experience in Unity is an advantage.What You Will Learn• Create 3D scenes with Unity and Blender while learning about world space and scale• Build and run VR applications for consumer headsets including Oculus Rift and Google Cardboard• Build interactive environments with physics, gravity, animations, and lighting using the Unity engine• Experiment with various user interface (UI) techniques that you can use in your VR applications• Implement the first-person and third-person experiences that use only head motion gestures for input• Create animated walkthroughs, use 360-degree media, and build multi-user social VR experiences• Learn about the technology and psychology of VR including rendering, performance and VR motion sickness• Gain introductory and advanced experience in Unity programming with the C# languageIn DetailWhat is consumer "virtual reality"? Wearing a head-mounted display you view stereoscopic 3D scenes. You can look around by moving your head, and walk around using hand controls or motion sensors. You are engaged in a fully immersive experience. On the other hand, Unity is a powerful game development engine that provides a rich set of features such as visual lighting, materials, physics, audio, special effects, and animation for creating 2D and 3D games. Unity 5 has become the leading platform for building virtual reality games, applications and experiences for this new generation of consumer VR devices.Using a practical and project-based approach, this book will educate you about the specifics of virtual reality development in Unity.You will learn how to use Unity to develop VR applications which can be experienced with devices such as the Oculus Rift or Google Cardboard. We will then learn how to engage with virtual worlds from a third person and first person character point of view. Furthermore, you will explore the technical considerations especially important and possibly

unique to VR. The projects in the book will demonstrate how to build a variety of VR experiences. You will be diving into the Unity 3D game engine via the interactive Unity Editor as well as C-Sharp programming.By the end of the book, you will be equipped to develop rich, interactive virtual reality experiences using Unity.So, let's get to it!Style and approachThis book takes a practical, project-based approach to teach specifics of virtual reality development in Unity. Using a reader-friendly approach, this book will not only provide detailed step-by-step instructions but also discuss the broader context and applications covered within.

Creating Augmented and Virtual Realities Erin Pangilinan 2019-03-18 Despite popular forays into augmented and virtual reality in recent years, spatial computing still sits on the cusp of mainstream use. Developers, artists, and designers looking to enter this field today have few places to turn for expert guidance. In this book, Erin Pangilinan, Steve Lukas, and Vasanth Mohan examine the AR and VR development pipeline and provide hands-on practice to help you hone your skills. Through step-by-step tutorials, you'll learn how to build practical applications and experiences grounded in theory and backed by industry use cases. In each section of the book, industry specialists, including Timoni West, Victor Prisacariu, and Nicolas Meuleau, join the authors to explain the technology behind spatial computing. In three parts, this book covers: Art and design: Explore spatial computing and design interactions, human-centered interaction and sensory design, and content creation tools for digital art Technical development: Examine differences between ARKit, ARCore, and spatial mapping-based systems; learn approaches to cross-platform development on head-mounted displays Use cases: Learn how data and machine learning visualization and AI work in spatial computing, training, sports, health, and other enterprise applications

Echoes of Other Worlds: Sound in Virtual Reality Tom A. Garner 2017-09-01 This book explores the nature and importance of sound in virtual reality (VR). Approaching the subject from a holistic perspective, the book delivers an emergent framework of VR sound. This framework brings together numerous elements that collectively determine the nature of sound in VR; from various aspects of VR technology, to the physiological and psychological complexities of the user, to the wider technological, historical and sociocultural issues. Garner asks, amongst other things: what is the meaning of sound? How have fictional visions of VR shaped our expectations for present technology? How can VR sound hope to evoke the desired responses for such an infinitely heterogeneous user base? This book if for those with an interest in sound and VR, who wish to learn more about the great complexities of the subject and discover the contemporary issues from which future VR will surely advance.

Unreal Engine 4 Virtual Reality Projects Kevin Mack 2019-04-30 Learn to design and build Virtual Reality experiences, applications, and games in Unreal Engine 4 through a series of practical, hands-on projects that

teach you to create controllable avatars, user interfaces, and more. Key Features Learn about effective VR design and develop virtual reality games and applications for every VR platform Build essential features for VR such as player locomotion and interaction, 3D user interfaces, and 360 media players Learn about multiplayer networking and how to extend the engine using plugins and asset packs Book Description Unreal Engine 4 (UE4) is a powerful tool for developing VR games and applications. With its visual scripting language, Blueprint, and built-in support for all major VR headsets, it's a perfect tool for designers, artists, and engineers to realize their visions in VR. This book will guide you step-by-step through a series of projects that teach essential concepts and techniques for VR development in UE4. You will begin by learning how to think about (and design for) VR and then proceed to set up a development environment. A series of practical projects follows, taking you through essential VR concepts. Through these exercises, you'll learn how to set up UE4 projects that run effectively in VR, how to build player locomotion schemes, and how to use hand controllers to interact with the world. You'll then move on to create user interfaces in 3D space, use the editor's VR mode to build environments directly in VR, and profile/optimize worlds you've built. Finally, you'll explore more advanced topics, such as displaying stereo media in VR, networking in Unreal, and using plugins to extend the engine. Throughout, this book focuses on creating a deeper understanding of why the relevant tools and techniques work as they do, so you can use the techniques and concepts learned here as a springboard for further learning and exploration in VR. What you will learn Understand design principles and concepts for building VR applications Set up your development environment with Unreal Blueprints and C++ Create a player character with several locomotion schemes Evaluate and solve performance problems in VR to maintain high frame rates Display mono and stereo videos in VR Extend Unreal Engine's capabilities using various plugins Who this book is for This book is for anyone interested in learning to develop Virtual Reality games and applications using UE4. Developers new to UE4 will benefit from hands-on projects that guide readers through clearly-explained steps, while both new and experienced developers will learn crucial principles and techniques for VR development in UE4.

Unity® Virtual Reality Development with VRTK4 Christopher Coutinho 2022-03-31 Get hands-on practical knowledge of concepts and techniques for VR development using Unity® and VRTK version 4. This book is a step-by-step guide to learning VRTK 4 for developing immersive VR experiences.Unity is a powerful game engine for developing VR experiences. With its built-in support for all major VR headsets, it's the perfect tool for developers to realize their vision in VR. VRTK is a battle-tested VR solution for Unity; VRTK 4, in conjunction with Unity, has changed the dynamics of VR development.This book focuses on creating deep understanding of how advanced VR mechanics and techniques are built and utilized as a part of a VR

framework. You will start off by setting up your devices for VR development and learn about the advantages of using VRTK 4 over alternate SDKs. You will learn to setup your very own custom VRTK Rig, find out how to setup various advanced VR mechanics and locomotion techniques, how to create several spatial UI objects, and how to setup Unity 2D UI controls. You will also cover advanced topics such as using angular and linear drives, setting up a VR Simulator to work with a XBox Controller, and realistic physics VR hands. By the end of this book, you will know how to create advanced VR mechanics that can be used within any VR experience, game, or App and deployed across several platforms and hardware. What You Will Learn Understand how to develop Immersive VR experiences Create a VR simulator to test your project Generate advanced Spatial UI that you can interact with physically using your hands Who This Book Is For?Unity game developers conversant with Unity's Editor. Basic knowledge of how Unity Prefabs function, how events work in general, and programming logic would be beneficial.

Unity Virtual Reality Projects Jonathan Linowes 2015-09-01 Explore the world of Virtual Reality by building immersive and fun VR projects using Unity 3D About This Book Learn the basic principles of virtual reality applications and get to know how they differ from games and desktop apps Build various types of VR experiences, including diorama, first-person characters, riding on rails, 360 degree projections, and social VR A project-based guide that teaches you to use Unity to develop VR applications, which can be experienced with devices such as the Oculus Rift or Google Cardboard Who This Book Is For If you're a non-programmer unfamiliar with 3D computer graphics, or experienced in both but new to virtual reality, and are interested in building your own VR games or applications then this book is for you. Any experience in Unity is an advantage. What You Will Learn Create 3D scenes with Unity and Blender while learning about world space and scale Build and run VR applications for consumer headsets including Oculus Rift and Google Cardboard Build interactive environments with physics, gravity, animations, and lighting using the Unity engine Experiment with various user interface (UI) techniques that you can use in your VR applications Implement the first-person and third-person experiences that use only head motion gestures for input Create animated walkthroughs, use 360-degree media, and build multi-user social VR experiences Learn about the technology and psychology of VR including rendering, performance and VR motion sickness Gain introductory and advanced experience in Unity programming with the C# language In Detail What is consumer "virtual reality"? Wearing a head-mounted display you view stereoscopic 3D scenes. You can look around by moving your head, and walk around using hand controls or motion sensors. You are engaged in a fully immersive experience. On the other hand, Unity is a powerful game development engine that provides a rich set of features such as visual lighting, materials, physics, audio, special effects, and animation for creating 2D and

3D games. Unity 5 has become the leading platform for building virtual reality games, applications and experiences for this new generation of consumer VR devices. Using a practical and project-based approach, this book will educate you about the specifics of virtual reality development in Unity. You will learn how to use Unity to develop VR applications which can be experienced with devices such as the Oculus Rift or Google Cardboard. We will then learn how to engage with virtual worlds from a third person and first person character point of view. Furthermore, you will explore the technical considerations especially important and possibly unique to VR. The projects in the book will demonstrate how to build a variety of VR experiences. You will be diving into the Unity 3D game engine via the interactive Unity Editor as well as C-Sharp programming. By the end of the book, you will be equipped to develop rich, interactive virtual reality experiences using Unity. So, let's get to it! Style and approach This book takes a practical, project-based approach to teach specifics of virtual reality development in Unity. Using a reader-friendly approach, this book will not only provide detailed step-by-step instructions but also discuss the broader context and applications covered within.

Research and Development in the Academy, Creative Industries and Applications Rae Earnshaw 2017-03-07 This book examines how creativity feeds through into typical application areas, and the lessons that can be learned from this. A number of Case Studies in creative and general application domains are included which illustrate how the academy and industry can collaborate to mutual benefit and advantage. It also examines the pros and cons of the collaboration, and what lessons can be learned from successes or failures in aspects of the implementation and delivery. The academy has played a key role in the past in the research and development of key ideas and patents that have been migrated into successful industrial products and services and continues to do so. A variety of models of interaction between the academy and industry have been developed depending on the circumstances of the institution, its mission, its values, its expertise, and its relationship to the local and cultural environment in which it is situated. These models are reviewed and evaluated. The process of initial idea through to design and successful implementation is a pipeline. If this process requires the involvement of technology (as is more often the case – as creative applications are increasingly dependent on technology) then there is need to understand how this can efficiently and optimally be done. A number of factors tend to be generic and permeate many application areas (such as bandwidth requirements, use of colour, interaction methods) whilst others are more customized with specialist hardware and software (e.g. shared virtual environments, augmented reality).

Immersive Learning Craig Frehlich 2020-10-01 Most people want to reach their maximum potential; and the use of tools are no different. Some say power is influence. If this is true, then virtual reality has "superpowers" because of its ability to make the unreal viscerally real, engaging and immersive. Thanks to these powers VR can influence and affect education in ways that no technology tool has in the past. This book will help people understand the power and true potential of virtual reality (or VR). The prime directive of this book is to provide educators with a way of thinking about how to use virtual reality in education in order to reveal its true superpowers. And, to arm educators with several hands-on lessons to get them started on implementing VR as a tool to enhance learning outcomes. Ultimately, the book aims to have educators clearly understand VR's role in transforming education, thus reaching its maximum potential.

Reality Media Jay David Bolter 2021-11-16 How augmented reality and virtual reality are taking their places in contemporary media culture alongside film and television. T This book positions augmented reality (AR) and virtual reality (VR) firmly in contemporary media culture. The authors view AR and VR not as the latest hyped technologies but as media—the latest in a series of what they term "reality media," taking their places alongside film and television. Reality media inserts a layer of media between us and our perception of the world; AR and VR do not replace reality but refashion a reality for us. Each reality medium mediates and remediates; each offers a new representation that we implicitly compare to our experience of the world in itself but also through other media. The authors show that as forms of reality media emerge, they not only chart a future path for media culture, but also redefine media past. With AR and VR in mind, then, we can recognize their precursors in eighteenth-century panoramas and the Broadway lights of the 1930s. A digital version of Reality Media, available through the book's website, invites readers to visit a series of virtual rooms featuring interactivity, 3-D models, videos, images, and texts that explore the themes of the book.

Augmented and Mixed Reality for Communities Joshua A. Fisher 2021-07-14 Using mixed and augmented reality in communities is an emerging media practice that is reshaping how we interact with our cities and neighbors. From the politics of city hall to crosswalks and playgrounds, mixed and augmented reality will offer a diverse range of new ways to interact with our communities. In 2016, apps for augmented reality politics began to appear in app stores. Similarly, the blockbuster success of Pokémon Go illustrated how even forgotten street corners can become a magical space for play. In 2019, a court case in Milwaukee, Wisconsin, extended first amendment rights to augmented reality. For all the good that these emerging media provide, there will and have been consequences. Augmented and Mixed Reality for Communities will help students and practitioners navigate the ethical design and development of these kinds of experiences to transform their cities. As one of the first books of its kind, each chapter in the book prepares readers to contribute to the Augmented City. By providing insight into how these emerging media work, the book seeks to democratize the augmented and mixed reality space. Authors within this volume represent some of the leading scholars and practitioners working in the augmented and mixed reality space for civic media, cultural heritage, civic

games, ethical design, and social justice. Readers will find practical insights for the design and development to create their own compelling experiences. Teachers will find that the text provides in-depth, critical analyses for thought-provoking classroom discussions.

Unreal Engine Virtual Reality Quick Start Guide Jessica Plowman 2019-02-28

The New Leadership Literacies Bob Johansen 2017-09-05 Over the next decade, today's connected world will be explosively more connected. Anything that can be distributed will be distributed: workforces, organizations, supply webs, and more. The tired practices of centralized organizations will become brittle in a future where authority is radically decentralized. Rigid hierarchies will give way to liquid structures. Most leaders—and most organizations—aren't ready for this future. Are you? It's too late to catch up, but it's a great time to leapfrog. Noted futurist Bob Johansen goes beyond skills and competencies to propose five new leadership literacies—combinations of disciplines, practices, and worldviews—that will be needed to thrive in a VUCA world of increasing volatility, uncertainty, complexity, and ambiguity. This book shows how to (1) forecast likely futures so you can "look back" and make sure you're prepared now for the changes to come, (2) use low-risk gaming spaces to work through your concerns about the future and hone your leadership skills, (3) lead shape-shifting organizations where you can't just tell people what to do, (4) be a dynamic presence even when you're not there in person, and (5) keep your personal energy high and transmit that energy throughout your organization. This visionary book provides a vivid description of the ideal talent profile for future leaders. It is written for current, rising star, and aspiring leaders; talent scouts searching for leaders; and executive coaches seeking a fresh view of how leaders will need to prepare. To get ready for this future, we will all need new leadership literacies.

Virtual and Augmented Reality, Simulation and Serious Games for Education Yiyu Cai 2021-08-13 This book introduces state-of-the-art research on virtual reality, simulation and serious games for education and its chapters presented the best papers from the 4th Asia-Europe Symposium on Simulation and Serious Games (4th AESSSG) held in Turku, Finland, December 2018. The chapters of the book present a multi-facet view on different approaches to deal with challenges that surround the uptake of educational applications of virtual reality, simulations and serious games in school practices. The different approaches highlight challenges and potential solutions and provide future directions for virtual reality, simulation and serious games research, for the design of learning material and for implementation in classrooms. By doing so, the book is a useful resource for both students and scholars interested in research in this field, for designers of learning material, and for practitioners that want to embrace virtual reality, simulation and/or serious games in their education.

Virtual, Augmented, and Mixed Realities in Education Dejian Liu 2017-11-13 This book describes the current state of the art of various types of immersive learning: in research, in practice, and in the marketplace. It discusses advanced approaches in the design and development for various forms of immersive learning environments, and also the emerging innovations in assessment and research in the field. In addition, it demonstrates the opportunities and challenges in implementing advances in VR and immersion at scale in formal and informal learning. We are living in a time of rapid advances in terms of both the capabilities and the cost of virtual reality, multi-user virtual environments, and various forms of mixed reality. These new media potentially offer extraordinary opportunities for enhancing both motivation and learning across a range of subject areas, student developmental levels, and educational settings. With the development of practical and affordable virtual reality and mixed reality, people now have the chance to experience immersive learning both in classrooms and informally in homes, libraries, and community centers. The book appeals to a broad readership including teachers, administrators, scholars, policy makers, instructional designers, evaluators and industry leaders.

Learning Path 2017 "Virtual Reality gives users an immersive 3D gaming experience, and Unity 5 has become the leading platform for building virtual reality games and applications for different platforms. This Learning Path takes a practical, project-based approach to teach you about the specifics of VR development with the Unity 3D game engine. You will explore the technical considerations especially important and possibly unique to VR. The projects in this Learning Path will demonstrate how to build a variety of VR experiences. The projects will increase in complexity as the Learning Path progresses and will help you make the transition to a pro VR developer with Unity 5. You will gain a 360-degree gaming experience by creating amazing 3D game worlds. By the end of the Learning Path, you'll be able to develop rich, interactive virtual reality experiences using Unity."--Resource description page.

Digital Surgery Sam Atallah 2020-07-31 This book provides a trove of insightful perspectives on the current state and the realization of digital surgery. Digital surgery entails the application of artificial intelligence and machine learning toward automation in robotic-assisted surgery. More generally, the objective is to digitally define the patient, the surgical field, and the surgical problem or task at hand; to operate based on information, rather than based on anatomic planes alone. But digital surgery has shapeshifted into other, equally intriguing faces – many of which are exemplified by topics throughout this book. Digital surgery is fundamental to 3D-printed organs, mind-controlled limbs, image-guided navigation, and tele-mentoring. It is the key that unlocks the metaphorical doorway to surgical access, thereby creating a global framework for surgical training, education, planning, and much more. This text provides methods of measurement and perception outside of the human umwelt – including the ability to visualize fields beyond the visible light

spectrum, via near infrared fluorescent organic dyes which are rapidly being bioengineered to target specific tumors, as well as native anatomic structures of interest. Written by experts in the field, Digital Surgery is designed to help surgeons operate with an enriched understanding of an individual's specific attributes: including the human phenome, physiome, microbiome, genome, and epigenome. It also aids surgeons in harnessing the power and fluidity of the cloud, which is emerging as a significant resource for surgeons both regionally and globally.

Current and Prospective Applications of Virtual Reality in Higher Education Choi, Dong Hwa 2020-07-31 For the last decade, virtual reality has been utilized in diverse fields such as entertainment, medicine, and industry. Recently, virtual reality has been applied in educational settings in order to transform student learning and experiences through such methods as building prototypes using digital devices or exploring new cultures through immersive interactions. Teachers who can incorporate virtual reality into their classrooms can provide their students with more meaningful learning experiences and can witness higher engagement.

Current and Prospective Applications of Virtual Reality in Higher Education is a cutting-edge academic research book that provides comprehensive research on the integration of virtual reality in education programs and establishes foundations for course design, program development, and institutional strategic planning. The book covers an overall understanding and approach to virtual reality in education, specific applications of using virtual reality in higher education, and prospects and issues of virtual reality in the future. Highlighting a wide range of topics such as gamification, teacher training, and virtual reality, this book is ideal for teachers, instructional designers, curriculum developers, academicians, program developers, administrators, educational software developers, policymakers, researchers, education professionals, and students.

Archeologia e Calcolatori, 31.2, 2020 Paola Moscati 2020-10-22 Contiene gli Atti del Convegno Internazionale (Milano, 13 marzo 2019) "Milano internazionale: la fragilità territoriale dei contesti archeologici, Atti del Convegno Internazionale" e l'International Conference on Metrology for Archaeology and Cultural Heritage (Florence, 4-6 December 2019) "Logic and computing. The underlying basis of digital archaeology".