FORUM

Reviews

Understanding Virtual Reality—Interface, Application, and Design
William R. Sherman and Alan B. Craig
Morgan Kaufman. ISBN 1-55860-353-0. US$ 69.95

Reviewed by: Nigel W. John. Email: n.w.john@man.ac.uk

My first introductory textbook to the field of virtual reality (VR) was Kalawsky’s The Science of Virtual Reality (1993). I was pleased last year to obtain a copy of Computer Graphics and Virtual Environments—From Realism to Real-Time (Slater, Steed, and Chrysanthou), which provided a valuable update to the earlier work. I therefore wondered if there was a place so soon for another introductory reference book on VR. However, I enjoyed reading this new publication and found that Sherman and Craig provide much complementary material to Slater et al.’s book, and their own informative overview of the field.

The relatively short first part of the book introduces the topic of virtual reality: it provides definitions, identifies the key elements involved, and presents VR as a medium. The second part addresses VR systems and is the “meat” of the book. It covers the VR experience through chapters on the user interface, the technology components required, and the life experience of the participant. Comprehensive lists are given of all of the technology solutions and/or concepts that have been used to date for input to, output from, rendering, and interacting with a virtual world. The author’s style of listing the main points and then following up with detailed explanations and examples of each point makes the chapters easy to read. The later chapter on how to design a VR application and apply this technology to a particular problem was well written. It contains many useful design considerations that are often overlooked by an application developer. Many of us will benefit from the consistent use of the design criteria advocated here. The final chapter addresses the future of VR (a difficult area to predict), but I believe the authors have succeeded in giving some good predictions of what we might expect. The book also includes four detailed case studies as appendices. These have been selected carefully to cover a wide spectrum of VR applications. I particularly enjoyed reading about the “Crumbs” tool for scientific visualization and would like to try this software out at my own university facility.

My main criticism of the book is that it is very USA-centric. Practically all of the case studies, software products, and other examples given come from U.S.-based groups. I know of many examples of work from Europe and Asia that could also have been referenced to give a slightly more balanced overview of the field.

A companion Web site is available for the book. At the time of writing this review, the Web site was still being fine-tuned, but it looks as if it will be a useful resource for instructors and students and includes further case studies, sample programming assignments, and exam questions. The URL is difficult to find in the book, however. It was not until I reached p. 418 that I found the address (www.mkp.com/understanding-vr).

Overall, I believe that Sherman and Craig have produced an excellent reference on the current state of the art of VR and related technology. The book should be easily accessible to noncomputer scientists and provide a useful introduction to new students interested in studying the field.

Level of Detail for 3D Graphics
David Luebke, Martin Reddy, Jonathan D. Cohen, Amitabh Varshney, Benjamin Watson, and Robert Heubner
Morgan Kaufmann, ISBN 1-55860-838-9, $69.95

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Sparkling with ideas, this new book provides a timely and long-needed treatment of both the practice and theory of level of detail. As a field within computer graphics, level of detail (LOD) addresses the balance between the ever-increasing complexity of virtual worlds and the requirement to produce images of them in real time.

The intended audience for the book includes both graphics researchers and developers of real-time graphics applications, and it succeeds in supporting this broad audience while requiring of the reader only the essentials of computer science and interactive computer graphics. Needed math background is limited to basic...
He has developed many virtual reality and augmented reality applications in content areas ranging from archeology to zoology. He also teaches and advises on related topics. His edition of Understanding Virtual Reality has been a long time in the making [and as it happens, comes out on the 50th anniversary of Ivan Sutherland’s first working head-mounted display (HMD)]. Recognizing that the technology used to create immersive experiences would continually evolve, our goal for the first edition was to discuss topics in as era-agnostic/technology-agnostic a manner as possible. There are still the same design criteria that existed in the past, though we may know a little more about what works under particular circumstances than before. Understanding the essentials of virtual reality (VR) experiences and game design principles is necessary for designing an immersive VR game. Although there are many differences in design elements of VR games according to the experience that is wanted to be given to the player, many games also have common elements. In the line of this view, a guideline is aimed to be framed for VR game designers in the current study. We designed and trialled a virtual reality application, Melbourne 2100, that simulates a flooded CBD in a future Melbourne impacted by climate change. We hypothesised that experiencing dystopian futures in VR can make abstract and distal climate change more concrete for people, provoking public engagement and discussion. Understanding Virtual Reality: Interface, Application, And Design. The Morgan Kaufmann Series in Computer Graphics and Geometric Modeling Series Editor, Brian A. Barsky, University of California, Berkeley Understanding Virtual Reality William R. Sherman and Alan B. Craig. Introduction to Virtual Reality Defining Virtual Reality Four Key Elements of Virtual Reality Experience Key Element 1: Virtual World Key Element 2: Immersion Key Element 3: Sensory Feedback Key Element 4: Interactivity Combining the Elements Artificial Reality Virtual Reality, Telepresence, Augmented Reality, and Cyberspace A History of VR: Where Did Virtual Reality Technology Come From? Understanding Virtual Reality: Interface, Application, and Design, Second Edition arrives at a time when the technologies behind virtual reality have advanced dramatically. The book helps users take advantage of the ways they can identify and prepare for the applications of VR in their field. By approaching VR as a communications medium, the authors have created a resource that will remain relevant even as underlying technologies evolve. Included are a history of VR, systems currently in use, the application of VR, and the many issues that arise in application design and implementation, includ