Virtual Reality Technology, Second Edition with CD-ROM

By Grigore C. Burdea, Philippe Coiffet

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A groundbreaking Virtual Reality textbook is now even better

Virtual reality is a very powerful and compelling computer application by which humans can interface and interact with computer-generated environments in a way that mimics real life and engages all the senses. Although its most widely known application is in the entertainment industry, the real promise of virtual reality lies in such fields as medicine, engineering, oil exploration and the military, to name just a few. Through virtual reality scientists can triple the rate of oil discovery, pilots can dogfight numerically-superior "bandits," and surgeons can improve their skills on virtual (rather than real) patients.

This Second Edition of the first comprehensive technical book on the subject of virtual reality provides updated and expanded coverage of the technology—where it originated, how it has evolved, and where it is going. The authors cover all of the latest innovations and applications that are making virtual reality more important than ever before, including:

- Coverage on input and output interfaces including touch and force feedback
- Computing architecture (with emphasis on the rendering pipeline and task distribution)
- Object modeling (including physical and behavioral aspects)
- Programming for virtual reality
- An in-depth look at human factors issues, user performance, and
- sensorial conflict aspects of VR
- Traditional and emerging VR applications

The new edition of Virtual Reality Technology is specifically designed for use as a textbook. Thus it includes definitions, review questions, and a Laboratory Manual with homework and programming assignments. The accompanying CD-ROM also contains video clips that reinforce the topics covered in the textbook. The Second Edition will serve as a state-of-the-art resource for both graduate and undergraduate students in engineering, computer science, and other disciplines.

GRIGORE C. BURDEA is a professor at Rutgers-the State University of New

Jersey, and author of the book Force and Touch Feedback for Virtual Reality, also published by Wiley.

PHILIPPE COIFFET is a Director of Research at CNRS (French National Scientific Research Center) and Member of the National Academy of Technologies of France. He authored 20 books on Robotics and VR translated into several languages.

An Instructor's Manual presenting detailed solutions to all the problems in the book is available from the author's website. http://www.caip.rutgers.edu/vrtechnology/

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Editorial Review

Review

"…one of the best books available on the subject…I would recommend this as a great reference book. The authors have done an excellent and remarkable revision and update…" (*Computer Animations and Virtual Worlds*, December 2005)

"This comprehensive textbook describes the history of virtual reality technology from its beginnings about forty years ago, through present and future uses." (*Medical Reference Services Quarterly*, Fall 2004)

"…a must-have book. A textbook of this caliber is a welcomed asset for researchers, universities, and others in the field." (*Annals of Biomedical Engineering*, April 2004)

"Listing in the "More to Explore" section of an article entitled "Virtual-Reality Therapy" (*Scientific American*, August 2004)

"Instructors…students…persons interested in knowing something about the current state of virtual reality, and practitioners, researchers, and business involved in VR, will all find this a must-have book. A textbook of this caliber is a welcomed asset..." (*Annals of Biomedical Engineering*, Issue 32:04)

"...a well written introductory book on the subject...a fascinating book on a subject that everyone in medical technology will be using more of in coming years..." (*Biomedical Instrumentation & Technology*, January/February 2004)

"...a second edition that builds on the success of the first...well written and researched...an ideal introduction to a student or researcher...Burdea and Coiffet have taken a strong book and made it even better...tailored to the needs of students and would make an outstanding textbook for an introduction to virtual reality course...a must have for any student or researcher seriously interested in virtual reality." (*Presence*, Vol. 12, No. 6, December 2003)

"...provides an excellent overview of the field...a fine textbook.... I would recommend highly." (*Real Time Graphics*, August 2003)

"...excellent....a fine addition to the bookshelves of readers..." (*CyberPsychology and Behavior*, Vol. 6, No. 6)

"...this second edition was well overdue, but it has to be said that it has been worth the wait...a must-have book." (*Assembly Automation*, Vol 24(1), 2004)

Language Notes
Text: English (translation)
Original Language: French

From the Publisher
This in-depth review of current virtual reality technology and its applications provides a detailed analysis of the engineering, scientific and functional aspects of virtual reality systems and the fundamentals of VR

modeling and programming. It also contains an exhaustive list of present and future VR applications in a number of diverse fields. Virtual Reality Technology is the first book to include a full chapter on force and tactile feedback and to discuss newer interface tools such as 3-D probes and cyberscopes. Supplemented with 23 color plates and more than 200 drawings and tables which illustrate the concepts described.

Users Review

From reader reviews:

Jennifer Dillon:

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Harry Greene:

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Michelle Seidl:

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Joan Morris:

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