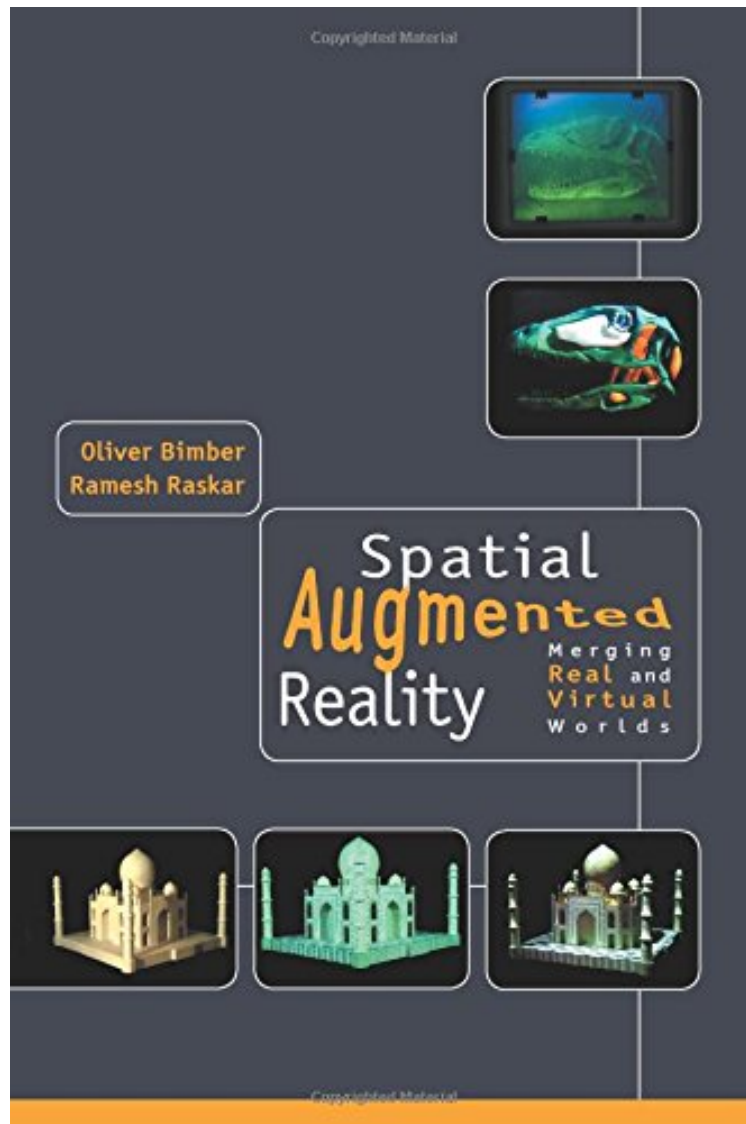


(Ebook free) Spatial Augmented Reality: Merging Real and Virtual Worlds

# Spatial Augmented Reality: Merging Real and Virtual Worlds

*Oliver Bimber, Ramesh Raskar*

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**Oliver Bimber, Ramesh Raskar : Spatial Augmented Reality: Merging Real and Virtual Worlds** before purchasing it in order to gauge whether or not it would be worth my time, and all praised Spatial Augmented Reality: Merging Real and Virtual Worlds:

0 of 0 people found the following review helpful. Spatial Augmented Reality book review By Robert Ladrach This book covers a very methodological approach to augmented reality. It goes into some of the technical background of how AR works and new opportunities to make even more progress with AR designs. A little technical so not a light read

but informative none the less. 3 of 3 people found the following review helpful. widely accessible descriptions By W Boudville Previously, I'd thought augmented reality was the same as virtual reality. But Bimber corrects this oversight. Augmented reality has to do with physical devices that contribute to the perception of a real world scene. Whereas virtual reality discussions can, and often do, revolve entirely around purely geometric constructs implemented entirely in software. So much of this book centres on display hardware. What types of displays are currently available that can augment your vision. Some are handheld, some are worn [i.e. heads up display], and some are for the tabletop. The HUDs are a disappointment, though this is a critique of the current technology and not of the text. The biggest hinderances to wider HUD usage are the weight and the power supply. Of course, the latter also restricts so much of other mobile devices. There is also a light discussion about the maths involved in geometrical optics, so that you can make sense of some of the later passages in the book. Optics is also covered, but not at the level of Maxwell's Equations. Instead, it suffices to keep to the simpler level about Snell's Law and the like. As expected in a book of this nature, there are colour plates showing typical output of various displays. Nice add-on that contributes to the relevance. 9 of 10 people found the following review helpful. Excellent comprehensive book on an emerging technology By calvinme Augmented Reality is different from Virtual Reality in that part of the scene is "real" and part of the scene is computer generated. In Virtual Reality, the entire experience is computer generated. This is one of the very few helpful books on augmented reality that is not so academic and terse that it can only be understood by an optics specialist or a designer of specialized hardware. Chapter one is simply an overview of the entire book. Chapter two is a brief overview of geometric optics that is intertwined with an explanation of how light and optics are used to form pixel images. It would help if the reader already had a knowledge of geometric optics along the lines of what is generally offered in college freshman physics. Chapter three then examines what is state-of-the-art in display technology for augmented reality systems. This is followed with geometric modeling concepts that show equations for stereo vision, interactive rendering, camera calibration, etc. that are necessary for placing the computer generated image in the realistic scene. Equations and instructive diagrams are shown throughout the book so that the reader can write his own code to produce the necessary computer graphics. The notation is clear and easy to follow. Also, snippets of OpenGL code are shown for quite a few of the algorithms. The reader should already be familiar with computer graphics algorithms and with OpenGL, as little time is spent in basic instruction on these subjects. The best and most unique parts of the book are the sections on holograms and on the simulation of motion. In summary, I would highly recommend this book especially for those interested in the programming, algorithms, and geometric optics involved in augmented reality system design. I also suggest "Real-Time Rendering" by Tomas Moller for further reading, since that book contains algorithms that are essential to augmented reality systems.

Like virtual reality, augmented reality is becoming an emerging platform in new application areas for museums, edutainment, home entertainment, research, industry, and the art communities using novel approaches which have taken augmented reality beyond traditional eye-worn or hand-held displays. In this book, the authors discuss spatial augmented reality approaches that exploit optical elements, video projectors, holograms, radio frequency tags, and tracking technology, as well as interactive rendering algorithms and calibration techniques in order to embed synthetic supplements into the real environment or into a live video of the real environment. Special Features: - Comprehensive overview - Detailed mathematical equations - Code fragments - Implementation instructions - Examples of Spatial AR displays The authors have put together a preliminary collection of Errata. Updates will be posted to this site as necessary.

About the Author Oliver Bimber is an Assistant Professor for Augmented Reality at the Bauhaus University Weimar, Germany. He received his Ph.D. in Engineering at the Technical University of Darmstadt, Germany. Ramesh Raskar earned his Ph.D. at the University of North Carolina, Chapel Hill, where he developed a framework for projector based displays. He has won numerous awards, most recently the Mitsubishi Electric Valuable Invention Award 2004. His papers have appeared in SIGGRAPH, Eurographics, IEEE Visualization, CVPR and many other graphics and vision conference proceedings.