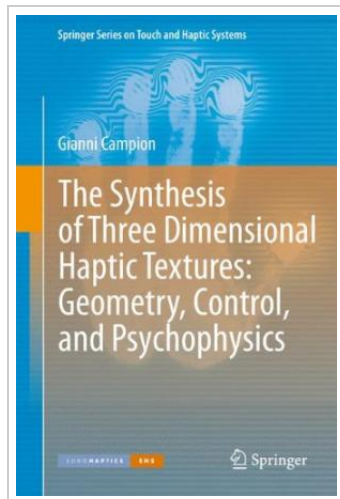




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The Synthesis of Three Dimensional Haptic Textures, Geometry, Control, and Psychophysics

By Gianni Campion

Springer London Ltd. Hardcover. Condition: New. This item is printed on demand. 176 pages. The sense of touch is fundamental during the interaction between humans and their environment; in virtual reality, objects are created by computer simulations and they can be experienced through haptic devices. In this context haptic textures are fundamental for a realistic haptic perception of virtual objects. This book formalizes the specific artefacts corrupting the rendering of virtual haptic textures and offers a set of simple conditions to guide haptic researchers towards artefact-free textures. The conditions identified are also extremely valuable when designing psychophysical experiments and when analyzing the significance of the data collected. The Synthesis of Three Dimensional Haptic Textures, Geometry, Control, and Psychophysics examines the problem of rendering virtual haptic textures with force feedback devices. The author provides an introduction to the topic of haptic textures that covers the basics of the physiology of the skin, the psychophysics of roughness perception, and the engineering challenges behind haptic textures rendering. The book continues with the presentation of a novel mathematical framework that characterizes haptic devices, texturing algorithms and their ability to generate realistic haptic textures. Finally, two psychophysical experiments link the perception of roughness with the...



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