

Dangxiao Wang · Jing Xiao · Yuru Zhang

Haptic Rendering for Simulation of Fine Manipulation

This book introduces the latest progress in six degrees of freedom (6-DoF) haptic rendering with the focus on a new approach for simulating force/torque feedback in performing tasks that require dexterous manipulation skills. One of the major challenges in 6-DoF haptic rendering is to resolve the conflict between high speed and high fidelity requirements, especially in simulating a tool interacting with both rigid and deformable objects in a narrow space and with fine features. The book presents a configuration-based optimization approach to tackle this challenge. Addressing a key issue in many VR-based simulation systems, the book will be of particular interest to researchers and professionals in the areas of surgical simulation, rehabilitation, virtual assembly, and inspection and maintenance.

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