

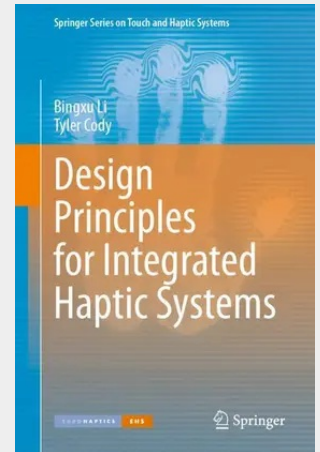
Design Principles for Integrated Haptic Systems

This unique monograph explores the science and technology of touch, bridging human tactile perception and advanced haptic interfaces. Aimed at researchers and designers in haptics, it shows how understanding skin biomechanics leads to more intuitive haptic systems.

Starting with how mechanical signals processed by the skin produce tactile sensations, it emphasizes the importance of skin deformation patterns correlated with psychophysical responses, highlighting individual differences in tactile sensitivity. It presents practical design principles for sensors and actuators that replicate natural touch and discusses system integration using AI models to predict user experiences and adapt haptic feedback to individual needs. Additionally, it explores designing artificial skin that emulates human skin behavior and natural sensory processing. Concluding with future directions, it advocates for human-centered systems offering consistent tactile experiences across user groups to enhance accessibility and usability.

Dr. Bingxu Li is Chief Technology Officer at SmartHap, a haptic technology company based in Virginia, USA. **Dr. Tyler Cody** is Chief Executive Officer at SmartHap, as well as Associate Professor of Data Science at the University of Virginia in Charlottesville, Virginia, USA, where he serves as Director of the Artificial General Intelligence Lab.

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