

Innovations

in *Gesture-controlled*
and Immersive Applications



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and Immersive Applications

Editors

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PREFACE

The concept of gesture-controlled interfaces has long fascinated both researchers and developers striving to make human-computer interaction more natural, intuitive, and immersive. With the rise of virtual reality (VR), augmented reality (AR), and mixed reality (MR), the limitations of traditional input devices have become increasingly apparent. This book emerged from a series of technical approaches and academic investigations into how hand gestures can be used to interact with digital environments. The projects documented here—from solar system exploration using Leap Motion to virtual pottery and gesture-based holograms—demonstrate the versatility of gesture control. What began as isolated experiments evolved into a broader understanding of multimodal interaction, user-centered design, and the technical intricacies involved in building immersive, gesture-based systems. These chapters showcase not just the final applications but also the thought processes, iterations, and lessons that shaped them. The book is written for students, educators, developers, and researchers who are curious about bridging the physical and digital worlds. Finally, this work would not have been possible without the shared curiosity, creativity, and technical skill of students, colleagues, and the broader human-computer interaction (HCI) and extended reality (XR) communities at Universiti Teknologi Malaysia. Let this book serve not only as a guide but also as an invitation to reach beyond the screen, and quite literally, into new dimensions of interaction.

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