Título: 3d Shape Analysis. Construction, Classification And Matching

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Precio: $1237.00

Editorial:

Año: 2008

Tema:

Edición: 1ª

Sinopsis

ISBN: 9783639053227

With the increasing computing power of modern computers, 3D graphics technologies find more and more applications in various fields. For example, 3D animation techniques can produce spectacular movie scenes that are difficult by traditional methods. For many of these 3D graphics technologies, 3D shape analysis is the key. In the example, only with correct 3D shape models can one render a real sensed scene. This book focuses on latest research in 3D shape analysis including surface construction, shape classification and matching. It also discusses related supporting technologies such as image segmentation, conformal mapping and pattern recognition. For surface construction, the book introduces a new generalized marching cubes method that allows zero samples to better preserve the original topology and improve representation accuracy. For 3D shape classification, a new method based on spherical normal images is proposed. Furthermore, the book explores a new classification and matching method based on 4D hyper-spherical harmonics. It performs better than methods based on concentric spheres models at same feature vector length.