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Sinopsis

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Exploring theories and applications developed during the last 30 years, Digital Geometry in Image Processing presents a mathematical treatment of the properties of digital metric spaces and their relevance in analyzing shapes in two and three dimensions. Unlike similar books, this one connects the two areas of image processing and digital geometry, highlighting important results of digital geometry that are currently used in image analysis and processing.

The book discusses different digital geometries in multi-dimensional integral coordinate spaces. It also describes interesting properties of the geometries, including metric and topological properties, shapes of circles and spheres, proximity to Euclidean norms, and number theoretic representations of geometric objects such as straight lines and circles. The authors_all active researchers in image processing and digital geometry_demonstrate how these concepts and properties are useful in various techniques for image processing and analysis. In particular, the book covers applications in object representation and shape analysis.

With many figures (some in color) and end-of-chapter exercises, this book provides an in-depth, unified account of digital metrics, the characterization of digital curves and straight lines, and their uses in shape analysis. It gives you insight on the latest two- and three-dimensional image processing applications.