

Digital Geometry: New Trends and Developments

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Abstract

Digital geometry mainly comes from two research areas: image processing and computer graphics. A digital image in 2D is in the form of digital grid points; it is a natural treatment of using geometry in image processing including segmentation, recognition, and reconstruction. On the other hand, computer graphics use geometric design, object dynamics, and modification. Digital geometry is also highly related to algorithmic geometry (computational geometry), which is more focused on algorithm design for discrete objects in Euclidean space. In this talk, we mainly focus on the digital method for geometric and topological computation. We also deal with the current topics in data science using digital geometric method. At the end of the talk, we will introduce a graph-theoretical method for defining discrete manifolds and its advantages in computer implementations.

Keywords: Digital geometry, computational geometry, Euclidean space, integer grid points, discrete manifolds.