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Digital convexity and digital planarity, global and local perspectives

Abstract

This talk will present old and new results on digital convexity in 2D and 3D, with an emphasis with the link with digital linearity and planarity. In 2D, we will relate convexity to local contour analysis, either by digital straight segments or by word decomposition. In 3D, it is much more challenging to use digital plane recognition algorithm to analyse the object geometry. We will present a new class of algorithms that probe locally planes to determine its geometry. Their use for locally analysing the convexity of arbitrary 3D shapes will be demonstrated.