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Title: The geometry of 3D image reconstruction in Computer Vision.

Abstract:

The 3D image reconstruction problem aims to create a 3D model of a scene or object starting from 2D images. This process is done in four stages: Feature identification in the images, point and line matching, camera estimation and triangulation, and construction of the 3D model. Stages two and three of the process deal mainly with geometric information that can be studied algebraically. This is precisely where Algebraic Geometry comes into play. In this talk I will introduce the 3D image reconstruction problem, present how cameras and image features are modelled algebraically, and mention some algebraic results on the geometry of points and lines that can be reconstructed effectively.