Representing 3D models for matching and retrieval

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In this talk, I will present two ways of representing 3D models for applications in computer vision.

The first approach relies on harmonic analysis to associate to each point of the 3D model a descriptor robust to small deformations of the model. I will detail in particular the definition of two popular descriptors, HKS and WKS, and present how they can be used for 3D shape matching using the functional map framework.

The second approach considers 2D projections of a 3D model and then describes each rendered view with a 2D image descriptor. The most popular descriptors in computer vision are currently Convolutional Neural Network features. I will present them briefly and show applications to 3D shape retrieval and 2D-3D matching.

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