Modeling Deformable 3D Surfaces from Single Videos

Pascal Fua

Ecole Polytechnique Fédérale de Lausanne, CH

Abstract

Without a strong model, 3D shape recovery of non-rigid surfaces from monocular video sequences is a severely under-constrained problem. Prior models are required to resolve the inherent ambiguities. In our work, we have investigated several approaches to incorporating such priors without making unwarranted assumptions about the physical properties of the surfaces we are dealing with.

In this tutorial, I will present these approaches and discuss their relative strengths and weaknesses. I will also demonstrate that they can be incorporated into effective algorithms that can capture very complex deformations.

Syllabus: Monocular 3D Shape Reconstruction, Shape from Structure, Deformable Surfaces