
JOEL HASS, UC Davis

Comparing Surfaces of Genus Zero

The problem of comparing the geometric shapes of a pair of surfaces with the same topology arises in facial recognition, image processing, brain cortex analysis, protein structure analysis and computer vision. We will discuss a new method to compare the shapes of two genus-zero surfaces. The method produces a new metric on the space of piecewise-smooth genus-zero Riemannian surfaces. In addition to giving a distance between a pair of surfaces, the method also produces an optimal correspondence between them. We will show some applications to neuroscience, to the study of proteins, and to geometric morphometrics (joint with Patrice Koehl).