

Threshold dynamics for high order geometric motions

Selim Esedoglu

Department of Mathematics

University of Michigan

esedoglu@umich.edu

ABSTRACT

I will describe a class of algorithms for the high order geometric motion of planar curves. These algorithms, which are inspired by an earlier method of Merriman, Bence, and Osher for simulating motion by mean curvature, alternate two simple steps -- a convolution step and a thresholding step -- to evolve planar curves according to combinations of Willmore flow, surface diffusion flow, and curvature motion. Error analyses and numerical examples for a variety of flows will be provided, and applications to problems in image processing and computer vision will be indicated. Joint work with Steven Ruuth and Richard Tsai.