

# The Simplicial Multiscale Flat Norm

Sharif Ibrahim, Bala Krishnamoorthy and Kevin R. Vixie

Washington State University

## Abstract

In this work the multiscale flat norm, useful for various image and shape tasks, is extended to simplicial complexes. In particular, we exploit the recent work of Krishnamoorthy and collaborators to move the computational problem from an NP-complete computation to a polynomial calculation through a relaxation of the implicit integer problem. A new deformation theorem for currents allows us apply this to arbitrary submanifolds of surfaces in  $\mathbb{R}^n$ .