

FAST MARCHING FOR ROBUST SURFACE SEGMENTATION

F. Schindler, W. Förstner

Department of Photogrammetry, University of Bonn, Nussallee 15, 53115 Bonn, Germany –
falko.schindler@uni-bonn.de, wf@ipb.uni-bonn.de

Working Groups I/2, III/1, III/4, III/5

KEY WORDS: segmentation, point clouds, laser range data

ABSTRACT:

We propose a surface segmentation method based on Fast Marching Farthest Point Sampling designed for noisy, visually reconstructed point clouds or laser range data. Adjusting the distance metric between neighboring vertices we obtain robust, edge-preserving segmentations based on local curvature. We formulate a cost function given a segmentation in terms of a description length to be minimized. An incremental-decremental segmentation procedure approximates a global optimum of the cost function and prevents from under- as well as strong over-segmentation. We demonstrate the proposed method on various synthetic and real-world data sets.

This contribution was selected in a double blind review process to be published within the *Lecture Notes in Computer Science* series (Springer-Verlag, Heidelberg).

Photogrammetric Image Analysis

Volume Editors: Stilla U, Rottensteiner F, Mayer H, Jutzi B, Butenuth M

LNCS Volume: 6952

Series Editors: Hutchison D, Kanade T, Kittler J, Kleinberg JM, Kobsa A, Mattern F, Mitchell JC, Naor M,
Nierstrasz O, Pandu Rangan C, Steffen B, Sudan M, Terzopoulos D, Tygar D, Weikum G

ISSN: 0302-9743

The article is accessible online through www.springerlink.com.