Accepted Manuscript

Elastic geometric shape matching for translations under the Manhattan norm

Christian Knauer, Luise Sommer, Fabian Stehn

 PII:
 S0925-7721(18)30002-6

 DOI:
 https://doi.org/10.1016/j.comgeo.2018.01.002

 Reference:
 COMGEO 1512

To appear in: Computational Geometry: Theory and Applications

Received date:14 August 2015Revised date:10 June 2016Accepted date:10 January 2018



Please cite this article in press as: C. Knauer et al., Elastic geometric shape matching for translations under the Manhattan norm, *Comput. Geom.* (2018), https://doi.org/10.1016/j.comgeo.2018.01.002

This is a PDF file of an unedited manuscript that has been accepted for publication. As a service to our customers we are providing this early version of the manuscript. The manuscript will undergo copyediting, typesetting, and review of the resulting proof before it is published in its final form. Please note that during the production process errors may be discovered which could affect the content, and all legal disclaimers that apply to the journal pertain.

ACCEPTED MANUSCRIPT

Elastic Geometric Shape Matching for Translations under the Manhattan Norm

Christian Knauer, Luise Sommer, Fabian Stehn Institut für Informatik, Universität Bayreuth, Bayreuth, Germany

Abstract

The term *elastic geometric shape matching* (EGSM) refers to geometric optimization problems that are a generalization of many classical and well-studied geometric shape matching problems. In a geometric shape matching problem, one seeks a *single* transformation that, if applied to a geometric object – the pattern – minimizes the distance of the transformed object to another geometric object – the model.

In an EGSM problem, the pattern is partitioned into parts which are transformed by a collection of transformations, called a *transformation ensemble*, in order to minimize the distance of the individually transformed parts to the model under the constraint that specific pairs of transformations of the ensemble have to be *similar*. These constraints are defined by an abstract graph on the parts of the model, called the *neighborhood graph*.

We present algorithms for an EGSM problem for point sets under translations where the neighborhood graph is a tree. We measure the similarity of the shapes by the L_1 -Hausdorff distance (and the Hausdorff distance induced by other polygonal metrics).

Keywords: computational geometry, exact elastic shape matching, polygonal norms, approximation

2010 MSC: 68-25, 68-40

Download English Version:

https://daneshyari.com/en/article/6868430

Download Persian Version:

https://daneshyari.com/article/6868430

Daneshyari.com