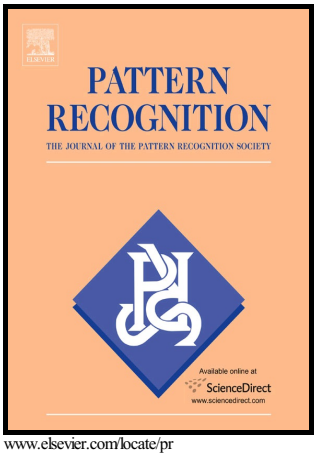
Author's Accepted Manuscript

Multi-scale context for scene labeling via flexible segmentation graph

Quan Zhou, Baoyu Zheng, Weiping Zhu, Longin Jan Latecki



www.elsevier.com/locate/pr

PII: S0031-3203(16)30008-5
DOI: http://dx.doi.org/10.1016/j.patcog.2016.03.023
Reference: PR5684

To appear in: *Pattern Recognition*

Received date: 31 July 2015
Revised date: 12 March 2016
Accepted date: 17 March 2016

Cite this article as: Quan Zhou, Baoyu Zheng, Weiping Zhu and Longin Jan Latecki, Multi-scale context for scene labeling via flexible segmentation graph *Pattern Recognition,* http://dx.doi.org/10.1016/j.patcog.2016.03.023

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 galley proof before it is published in its final citable 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

Multi-scale Context for Scene Labeling via Flexible Segmentation Graph

Quan Zhou, Baoyu Zheng

Key Laboratory of Ministry of Education for Broad Band Communication and Sensor Network Technology,
Nanjing University of Posts and Telecommunications, Nanjing, China 21003.

Weiping Zhu

Department of Electrical and Computer Engineering, Concordia University, Montreal, Canada.

Longin Jan Latecki

Department of Computer and Information Science, Temple University, Philadelphia, USA.

Accepted manuscript

Abstract

Using contextual information for scene labeling has gained substantial attention in the fields of image processing and computer vision. In this paper, a fusion model using flexible segmentation graph (FSG) is presented to explore multi-scale context for scene labeling problem. Given a family of segmentations, the representation of FSG is established based on the spatial relationship of these segmentations. In the scenario of FSG, the labeling inference process is formulated as a contextual fusion model, trained from the discriminative classifiers. Compared to previous approaches, which usually employ Conditional Random Fields (CRFs) or hierarchical models to explore contextual information, our FSG representation is flexible and efficient without hierarchical constraint, allowing us to capture a wide variety of visual context for the task of image labeling. Our approach yields state-of-the-art results on the MSRC dataset (21 classes) and the LHI dataset (15 classes), and near-record results on the SIFT Flow dataset (33 classes) and PASCAL VOC segmentation dataset (20 classes), while producing a 320×240 scene labeling in less than a second. A remarkable fact is that our approach also outperforms recent CNN-based methods.

Download English Version:

https://daneshyari.com/en/article/4969958

Download Persian Version:

https://daneshyari.com/article/4969958

Daneshyari.com