## **Accepted Manuscript**

Road Segmentation for All-Day Outdoor Robot Navigation

Yuxiao Zhang, Haiqiang Chen, Yiran He, Mao Ye, Xi Cai, Dan Zhang

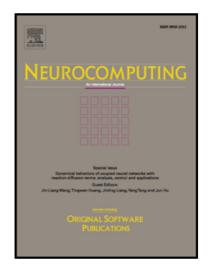
PII: \$0925-2312(18)30797-5

DOI: 10.1016/j.neucom.2018.06.059

Reference: NEUCOM 19737

To appear in: Neurocomputing

Received date: 19 February 2018 Revised date: 26 June 2018 Accepted date: 28 June 2018



Please cite this article as: Yuxiao Zhang, Haiqiang Chen, Yiran He, Mao Ye, Xi Cai, Dan Zhang, Road Segmentation for All-Day Outdoor Robot Navigation, *Neurocomputing* (2018), doi: 10.1016/j.neucom.2018.06.059

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

# Road Segmentation for All-Day Outdoor Robot Navigation

Yuxiao Zhang<sup>a</sup>, Haiqiang Chen<sup>a</sup>, Yiran He<sup>b</sup>, Mao Ye<sup>a,\*</sup>, Xi Cai<sup>a</sup>, Dan Zhang<sup>a</sup>

<sup>a</sup>School of Computer Science and Engineering, Key Laboratory for NeuroInformation of Ministry of Education, University of Electronic Science and Technology of China, Chengdu 611731, China

<sup>b</sup>School of Mathematics, Sichuan Normal University, Chengdu 611731, China

#### Abstract

Road segmentation for all-day outdoor robot navigation is a difficult problem, for the image quality in some time is considerably terrible. In this paper, we propose an effective method to solve this problem. For an outdoor image in any time, the road segmentation can be separated into two stages. Firstly, a supervised generative network is trained to map the outdoor images in any time to the images with rich information. Secondly, a semantic segmentation network outputs a binary segmentation result. Our main contributions include: 1) firstly implementing road segmentation for all-day outdoor robot navigation with a low cost; 2) constructing a supervised generative network for domain mapping and 3) building a dataset for road segmentation for the outdoor images in any time. Our method is evaluated on three datasets. The results indicate that our method achieves a comparable performance with the state-of-the-art approaches.

Keywords: Road segmentation, robot navigation, generative network

#### 1. Introduction

Road segmentation is crucial for all-day outdoor robot navigation. With road areas segmented, robots are able to avoid barriers and plan path during navigation. However, road segmentation is extremely challenging in some time

Email address: cvlab.uestc@gmail.com (Mao Ye)

 $<sup>^*</sup>$ Corresponding author

## Download English Version:

# https://daneshyari.com/en/article/8960142

Download Persian Version:

https://daneshyari.com/article/8960142

<u>Daneshyari.com</u>