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# Road Segmentation for All-Day Outdoor Robot Navigation

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## 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

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## 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

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