

Review of bachelor thesis
“Deep learning for dense reconstruction from
sparse measurements”

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Reviewer: Tomáš Krajník

The aim of the proposed thesis was design, implementation and experimental verification of methods for 3D occupancy grid reconstruction from sparse data. The implemented methods are based on deep-learned approaches, in particular on 3d convolutional neural networks.

The text of the work is focused on description of the convolutional neural networks, and does not provide much details about the usefulness of the dense 3D representation for autonomous driving or mobile robotics. Furthermore, the experimental evaluation lacks details which would allow to assess the strength of the proposed approach. Moreover, the language quality is not great.

Nevertheless, the presented work exceeds requirements put on a bachelor thesis because it deals with a hard, novel problem. Moreover, the author had to learn, implement and evaluate state-of-the-art approaches described in recent scientific literature. The text of the thesis clearly indicates that the author was able to understand the concepts and to

I have the following questions:

1. How exactly did you divide the experimental data into the training and testing set?
2. Can you comment on the ability of the methods to predict data several meters apart from the sensor input (e.g. figures 5.3 and 5.6)?

The thesis does a good job in presenting the CNN-based approaches for dense map reconstruction. However, the introductory parts are missing description of the proposed representation in the context of robotics and automated driving, experimental evaluation lacks details necessary for reproduction, and the text would benefit from a thorough proofread. Thus, I propose to classify the thesis as

C - good

London,
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Tomáš Krajník