Object tracking with deep neural networks

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ABSTRACT OF THE
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Abbreviations

1 Introduction

Object tracking is a large and actively researched sub-area of computer vision. The main task for a tracker is to find and follow the desired subject in a sequence of images. The technology used for object tracking is closely related to other image analysis tasks and currently the majority of trackers are implemented as a neural network.

The field of image classification took a leap forward in 2012, when Krizhevsky et. al. presented record performance in the ImageNet-classification challenge using a convolutional network. Previous work had dismissed the network type as unfit for the task. [1] Since then, research has shifted to using convolutional networks as they have several clear advantages over other network types when used on picture analysis.

Comment by author:
Avaa etuja tässä ja/tai lisää lähde väitteelle?

With the adoption of convolutional networks, much of the research revolves around deep neural networks. They consist of visible input and output layers with several so-called hidden layers in between them. The training of deep neural networks requires a large amount of training data and their development has been made easier by an increase in the size of applicaple datasets.

This thesis will present the architectures and principles currently used in deep neural networks tailored to object tracking tasks. The practices behind training and evaluating such networks are also introduced.

2 Conclusions

conkluusiokappale

References

[1] Krizhevsky, A., I. Sutskever, and G. E. Hinton: *Imagenet classification with deep convolutional neural networks*. In *Advances in Neural Information Processing Systems*, volume 2, pages 1097–1105, 2012. http://papers.nips.cc/paper/4824-imagenet-classification-with-deep-convolutional-neural-networks.pdf.

Appendices

A Finnish summary - Suomenkielinen tiivistelmä

A Kohteenseuranta syvillä neuroverkoilla

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