Application for Thesis Contract

Type of thesis
Master's Thesis (kandidatspeciale / afgangsprojekt)

Student(s)

Name	CPR no.	Email
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Signature

School and Study Board
School of Information and Communication Technology (SICT)
Studienævn for Elektronik og IT

Programme
Vision, Graphics and Interactive Systems

Project Supervisor(s)
Kamal Nasrollahi   <kn@create.aau.dk>

Kamal Nasrollahi

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Signature

Collaboration with a company: YES

Company Contact Person
Christian Tveen Jensen   <cgt@navicon.dk>

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Signature

Project Title
Object Detection using Convolutional Neural Networks

Starting	Deadline	ECTS Credits
01/02	01/06/2017	30

Project Description
This master's thesis takes basis in object detection in images. Object detection is a fundamental area of computer vision that has had a great amount of research over the past couple of decades. The goal of object detection is twofold. Firstly, given a set of pre-defined categories, objects in an image should be classified accordingly. Secondly, the objects in question must also be localised in an image. This is typically done with a bounding-box. The majority of current state-of-the-art methods take advantage of deep learning with convolutional neural networks (CNN). This has lead to large advances within object detection which is

exemplified in benchmark challenges such as PASCAL VOC, ImageNet, and MS COCO. However, there is still room for improvement if object detection are to used in applications that require a high level of accuracy, repeatability, and performance. Therefore. this thesis will look into the improvement of the first task outlined earlier of object detection; classification. Taking a basis in current best performing models and approaches improvements can include looking into ensemble methods that aim to combine methods that have strengths in different areas. Another approach can be providing more accurate locations for the CNN to classify.

Plan for Thesis Supervision and Lab Work
The thesis supervisor meets with the student(s) approximately once a week to discuss progress, time schedule, resources, lab work, ideas, issues etc.

Approved by Head of Studies

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Date   Signature