

**Project
Interactive Media**

Project Proposal

☒ 1st Semester
☐ 2nd Semester
☐ Thesis Project

Submitted by

Last name, first name

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18 / 4 / 0629 / 020

Date of submission

Project

Proposed topic

Depth extraction from an RGB video using a LSTM/CNN neural network.

☒ New project
☐ Continuing project

Proposed project coach

Burger Wilhelm

Assigned project coach

Project exposition

Initial situation, project aims, short project description

The task to solve is the generation of depth maps starting from a RGB video. It is assumed that the scene is mostly static. There are several approaches to solve this problem, from geometric optimization systems [4] to Convolution Neural Network (CNN) methodologies [1][2].

The project aim is the evaluation of a novel Deep Neural Network method for depth extraction obtained by joining existing CNN models and augmenting them with "temporal" information using Long Short-Term network (LSTM). This type of joint CNN LSTM architecture as been already proposed in [3] and will be adapted to this specific task. Finally, a different cost function from [1][2] will be used for the Stochastic Gradient Descent (SGD) algorithm during training: this cost operation will be mostly inspired by the energy function described in [4].

In order to evaluate the project the KITTI and CityScope databases will be used.

References:

- [1] "Unsupervised CNN for Single View Depth Estimation: Geometry to the Rescue" (<https://arxiv.org/abs/1603.04992>)
- [2] "Unsupervised Learning of Depth and Ego-Motion from Video" (<https://arxiv.org/abs/1704.07813>)
- [3] "Long-term Recurrent Convolutional Networks for Visual Recognition and Description" (<https://arxiv.org/abs/1603.04992>)
- [4] "Consistent Depth Maps Recovery from a Video Sequence" (<https://ieeexplore.ieee.org/document/4798169>)

Add additional description on a separate page if necessary!

Status

☐ Accepted

☐ Rejected because _____

Resubmission till _____
YYYY MM DD

Date

Signature (assigned project coach)

Approval

Date

Signature (Head of Studies/programme coordinator)