FACULTY
OF INFORMATION
TECHNOLOGY
CTU IN PRAGUE

ASSIGNMENT OF BACHELOR'S THESIS

Title:	Deep learning for detection of defects in sewer CCTV
Student:	Ondřej Chládek
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Study Programme:	Informatics
Study Branch:	Knowledge Engineering
Department:	Department of Applied Mathematics
Validity:	Until the end of summer semester 2020/21

Instructions

Get familiar with deep learning techniques for video processing and anomaly detection from the video [1].
Design and evaluate techniques for the detection of defects in sewer CCTV inspection videos.
Demonstrate the capability of your algorithm of finding defects like cracks, roots, debris or missing bricks (these anomalies are annotated in the video so you can use supervised learning techniques).
Pay attention to the quality of input data processing.
Select suitable machine learning methods for the data preparation process, implement them and evaluate on a supplied dataset.
Utilize OpenCV libraries [3] to explore different video processing methods and TensorFlow [2] for deep learning.
Evaluate the accuracy of your functional prototype, document your code and deployment guidelines.

References

[1] Goodfellow, Ian, et al. /Deep Learning/. MIT Press, 2017.
[2] Abadi, Martin, et al. Tensorflow: A system for large-scale machine learning. 2016
[3] OpenCV team: Open Source Computer Vision Library

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Prague January 21, 2020