Corrosion Semantic Segmentation

Dependable Systems - Dirk Nowotka

Project Description

Semantic segmentation is the discipline of assigning a class to each pixel in an image. For example, the classes background, intact metal and corroded metal.

Figure 1: A pipe with corrosion under its coating (photograph by Vsoly-mossy, distributed under a CC-BY 3.0 license).

Semantic segmentation may be used to detect or even to differentiate corrosion of infrastructure (usually metal pipes/tubes/beams or reinforced concrete). Detecting and preventing corrosion is of great importance for the industry. Assisting engineers and inspectors in their maintenance work by digitalisation and the application of machine learning, may reduce their workload and enhance the quality of their work.

Your tasks as a student will be,

1. to develop a scientific methodology to segment semantically images regarding corrosion related classes,
2. to validate that existing annotated images respect your methodology,
3. to expand the pool of annotated images according to your methodology, and
4. to train and evaluate machine learning models for semantic segmentation, using provided high performance computers.

You may build upon existing work in the literature and especially upon work done previously at our group.

Applicable For

Bachelorstudents
Masterstudents

Skillset

Programming
Machine Learning

Keywords

Deep Neural Networks
Computer Vision
Semantic Segmentation

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