ABSTRACT

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Title   : Detecting Unstructured Text in Structural Drawing Using Machine
          Vision

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This focus of this thesis is the application of text detection, which is a field within computer vision, in structural drawings. To understand a structural system and conduct a rapid assessment of an existing structure would benefit from the ability to read the information contained within the drawing or related engineering documents. Extracting engineering data manually from the structural drawings is incredibly time-consuming and expensive. In addition, the variation in human engineers' experience makes the output prone to errors and false evaluations. In this study, the latest development in computer vision, especially for text detection, using large volumes of words in some structural drawings, is explored and evaluated. The goal is to read text in structural drawings, which usually has some feature noises due to the high complexity of the structural annotations and lines. The dataset consists of computer-generated structural drawings which have different word shapes and types of fonts with various text orientations. The utilized structural drawings are floor plans, and thus contain structural details which are filled with various structural element labels and dimensions. Fine tuning of the pre-trained model yields significant performance in unstructured text detection, especially in the model's recall. The results demonstrate that the developed predictive modeling workflow and its computational requirements are sufficient for the unstructured text detection in structural drawings.