

New Techniques for Assessing the Visual Condition of Civil Engineering Structures

Bridge inspection

Regular inspections of the condition of civil engineering structures, such as bridges, are vital to ensure they remain safe and fit for purpose. Currently, in the UK, highway structures are assessed using a regime of visual inspections. The inspections cover a range of detail, from a cursory check for obvious defects, to a close examination of all surfaces of the structure, including the use of special equipment if required. The quality of data collected depends on the ability of the inspectors to observe and objectively record details of defects.



Potential for automation

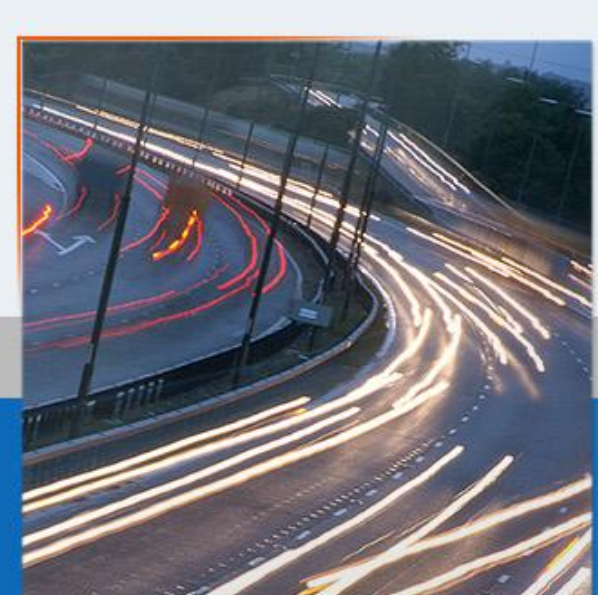
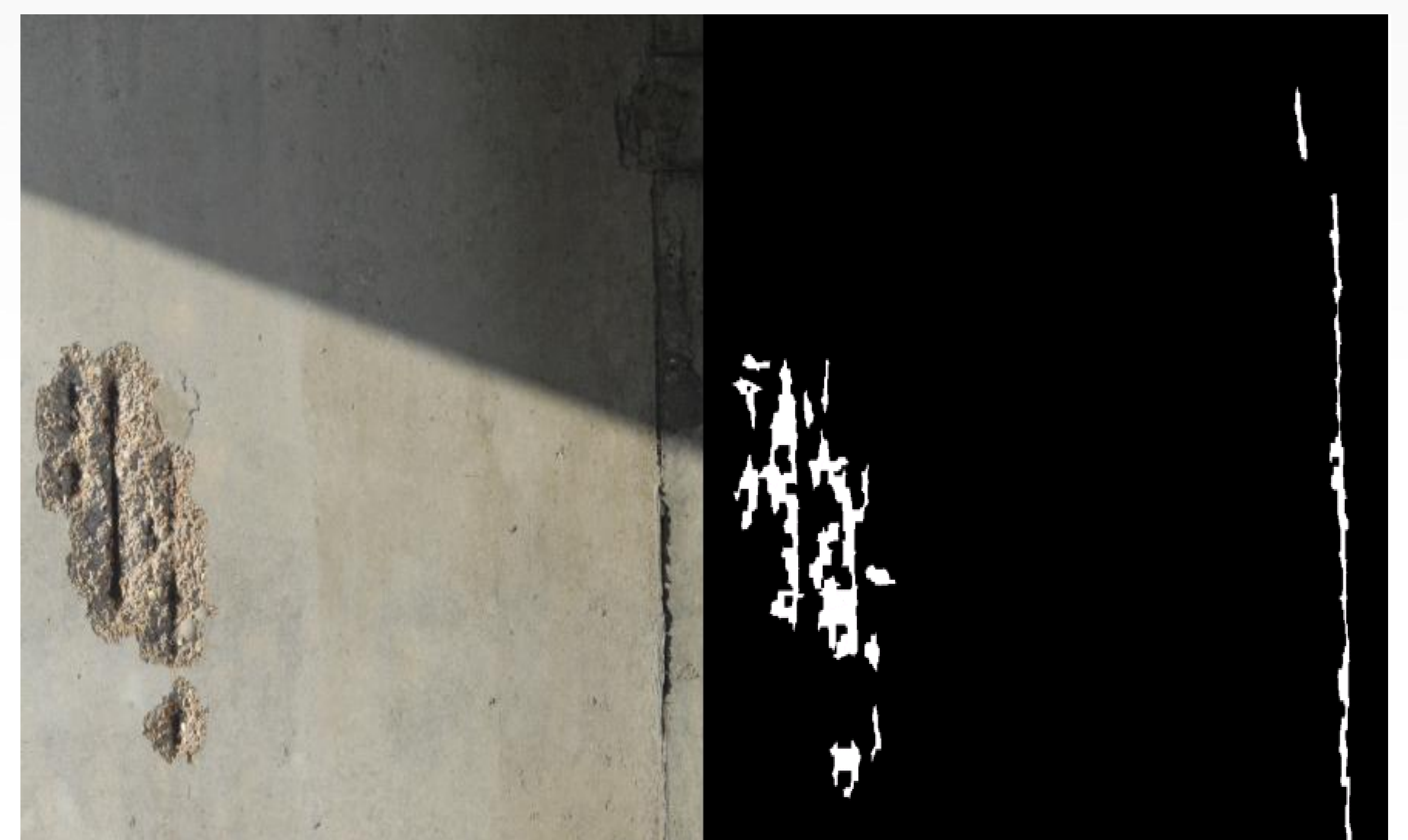
In order to improve the objectivity and reduce the levels of variability in the inspection results it has been proposed that research is undertaken to develop an automated approach. The research is focussing on the collection and interpretation of images of the structure. The aim is not to remove the engineer from the inspection process, but to assist them in making a consistent and objective assessment of condition. To date the research has been limited to concrete bridges with relatively simple geometries.

Progress to date

Research so far has investigated three main areas – data collection, data processing and data display. To help with the data collection a prototype image collection rig has been developed. This includes simple laser distance measurement devices, which help locate the images in relation to the structure. The data processing has investigated the use of image processing methods to detect defects present in the images, and the data display has looked at various visualisation methods to understand how best the information can be meaningfully conveyed to the engineer.

The future

Future research will include the use and integration of LiDAR data to provide structure shape information, the refinement of the defect detection and the development of advanced visualisation techniques.



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