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RA7   **Transport Infrastructure**

Bridge Safety Assessment

Increased levels of road freight transport would necessitate the use of heavier vehicles and/or a greater quantity of vehicles. This would affect both the serviceability and safety of the bridges.

An adequate structural health monitoring (SHM) scheme is necessary to ensure that the safety of the bridges is not compromised. Currently, visual inspection methods are the primary method of ascertaining bridge condition. The main drawbacks of this approach are the inconsistencies present between inspections due to human objectivity between bridge inspectors and the examination of areas on the bridge that are difficult to access.

This has led many researchers to investigate the use of a sensor-based SHM scheme. This project proposes a SHM scheme that is divided into two categories. One category is to monitor the existing traffic loading conditions of the bridge. The approach examined here uses computer vision methods to identify the type of vehicles based on information from a camera mounted on the bridge.

This data provides the types of loads that the bridge is enduring. Whilst this information is useful, it provides no information on the structural health of the bridge. The second aspect of the proposed SHM technique focuses on the area of bridge damage detection.

Appropriate signal processing techniques are applied to bridge sensor data to detect abnormalities that are attributed to the presence of damage on the bridge. Using both of these bridge monitoring strategies, long-term and short-term bridge maintenance and upgrade planning can be carried out in a more efficient manner •