Onsite Implementation of the Tap-scan Damage Detection Method on Bridge Structures

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An efficient inspection method that can quickly report the damage condition without traffic blocking is highly desired for the bridges located at busy transportation links. For this purpose, Xiang et al. proposed the Tap-scan damage detection method from the inspiration of the hunting behavior of woodpeckers [1]. With this method, damage information can be extracted from the acceleration of a passing vehicle with a tapping device. This talk reports the design of a bridge inspection vehicle based on the Tap-scan method. This vehicle has been implemented to the onsite inspection of several real bridges. Both structural discontinuities and local damage were clearly identified with a single scan at the speed of about 3km/h without stopping the traffic flow. This shows the potential of using this vehicle to filter out damaged bridges from large amount of candidates in a short time.

Keywords: Tap-scan method, Damage detection, Bridge, Inspection vehicle

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