A Risk Based Approach to Winter Road Surface Condition Classification

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ABSTRACT

This paper presents a risk based approach for classifying the road surface conditions of a highway network under winter weather events. A relative risk index (RRI) is developed to capture the effect of adverse weather conditions on the collision risk of a highway in reference to the normal driving conditions. Based on this index, multiple risk factors related to adverse winter weather conditions can be considered either jointly or separately. The index can also be used to aggregate different types of road conditions observed on any given route into a single class for risk-consistent condition classification and reporting. Two example applications are shown to illustrate the advantages of the proposed approach.

Key words: road surface condition classification, relative risk index, collision model