Consistent haul road condition monitoring by means of vehicle response normalisation with Gaussian processes

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Abstract

Suboptimal haul road management policies such as routine, periodic and urgent maintenance may result in unnecessary cost, both to roads and vehicles. A recent idea is to continually access haul road condition based on measured vehicle response. However the vehicle operating conditions, such as its instantaneous speed, may significantly influence its dynamic response resulting in possibly ambiguous road classifications. This paper proposes vehicle response calibration by means of Gaussian process regression, so that a severity metric which is more robust to fluctuating operating conditions may be obtained.