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An Alternative System for Assessing Pavement Condition in the Event of an Epidemic: A Case of COVID-19

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Abstract: Maintaining the efficiency of road pavement is essential to achieving the highest road performance and comfort for road users. Pavement monitoring plays a significant role in maintaining the sustainability of road networks. Additionally, assessments have been performed using different equipment and devices or through visual inspections to determine the type and severity of pavement degradation. However, some obstacles may affect the sustainability of road networks by preventing the regular monitoring and maintenance of pavements, such as the COVID-19 pandemic. Due to the COVID-19 pandemic, the construction and management of transportation systems have been affected by economic shut-downs and imposed social restrictions. Road networks have also suffered from neglect and a lack of monitoring and maintenance due to the government's lockdowns in addition to strict regulations that limit movement on roads and any form of construction, monitoring, inspection, and evaluation to improve road pavement conditions. This research introduces a safe pavement monitoring system using an e-bike to evaluate and predict pavement degradation. An accelerometer sensor and line-scan camera were used to collect pavement vibration data during the e-bike's movement. The results of the proposed monitoring method showed reliable evaluation outcomes. Moreover, the SVM model showed a significant contribution to detecting and classifying pavement distress.