World Academy of Science, Engineering and Technology
International Journal of Computer and Information Engineering
Vol:15, No:12, 2021

Unattended Crowdsensing Method to Monitor the Quality Condition of Dirt Roads

Authors : Matias Micheletto, Rodrigo Santos, Sergio F. Ochoa

Abstract : In developing countries, the most roads in rural areas are dirt road. They require frequent maintenance since are affected by erosive events, such as rain or wind, and the transit of heavy-weight trucks and machinery. Early detection of damages on the road condition is a key aspect, since it allows to reduce the main-tenance time and cost, and also the limitations for other vehicles to travel through. Most proposals that help address this problem require the explicit participation of drivers, a permanent internet connection, or important instrumentation in vehicles or roads. These constraints limit the suitability of these proposals when applied into developing regions, like in Latin America. This paper proposes an alternative method, based on unattended crowdsensing, to determine the quality of dirt roads in rural areas. This method involves the use of a mobile application that complements the road condition surveys carried out by organizations in charge of the road network maintenance, giving them early warnings about road areas that could be requiring maintenance. Drivers can also take advantage of the early warnings while they move through these roads. The method was evaluated using information from a public dataset. Although they are preliminary, the results indicate the proposal is potentially suitable to provide awareness about dirt roads condition to drivers, transportation authority and road maintenance companies.

Keywords : dirt roads automatic quality assessment, collaborative system, unattended crowdsensing method, roads quality awareness provision
Conference Title : ICCSIS 2021 : International Conference on Computer Science and Intelligent Systems
Conference Location : Barcelona, Spain
Conference Dates : December 16-17, 2021

Open Science Index, Computer and Information Engineering Vol:15, No:12, 2021 publications.waset.org/abstracts/139484.pdf