Abstract

Road roughness is one of the criteria used to describe road conditions and driving quality that is usually measured by an index such as the International Roughness Index (IRI). There are several methods in detecting road roughness, one of which uses IMU sensors and GPS on smartphones and then maps the road roughness index or road rudeness index and compares the results of visualization of the road rudeness index on Google Map with the actual road conditions. To process data from the IMU sensor used Signal Processing Low Pass Filter and High Pass Filter and then in integral fold two and divided into two parts, namely integral data directly as a whole and integral data per road segment or per 1 km. For GPS data will be combined with data from the IMU sensor so that visualization can be done on Google Map. In testing the accuracy of data is done by manually measuring using a ruler and direct observation. Measurement results from the IMU sensor are quite accurate but are still affected by the vehicle's suspension and the index scale is too high for visualization resulting in less accurate visualization results.

Keywords: Road roughness index, IMU Signal Processing, GPS, Smartphone, Google Map