

عنوان مقاله:

Innovative Technology for Traffic Detection by Smart Concrete

محل انتشار:

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خلاصه مقاله:

Nowadays public agencies are beginning to field requests for advanced technology capable of supporting smart cities and connected electric, autonomous and self-driving vehicles, so comprehensive research on smart roads is necessary. Smart roads could turn our roads into a true digital network; connecting drivers to the internet, supporting driverless vehicle technology and providing true connectivity between smart cars and tomorrow's smart cities. Researchers are developing new technologies to make infrastructure intelligent, safer, and more cost-effective with the aid of new materials. These new systems self-monitor the condition of roads and bridges quickly and accurately and can sometimes even repair themselves. New technologies and materials are helping engineers build roads better and faster while also improving maintenance for longer structural life. Smarter roads begin with smart pavement; the material type of pavement can have a significant impact on its performance. Today Concrete has become more and more popular in road constructions due to the facts that concrete lasts longer and its environmental friendliness. In this paper special kind of smart materials called as self-sensing concrete is discussed. The piezoresistive property of additives to concrete enables the composite to detect the stress/stain inside the pavement. Experimental results show that the electrical resistance of the composite changed proportionally to the compressive stress levels, so self-sensing pavement system can accurately detect the passing of different vehicles and can achieve real-time vehicle flow detection with a high detection rate. Experimental results demonstrated that the smart concrete function as excellent stress/strain sensors. Smart concrete paves way to high-tech, cost-effective roads.

کلمات کلیدی:

traffic detection, smart concrete, self-sensing concrete, smart road, innovative road technology

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