Ultra-Low Cost Vehicle Data Acquisition and Transfer System from Analog and Digital Sensors to Audio Channel of a Phone

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Abstract—The proposed system acquires and transfers data from a vehicle’s analog and digital sensors to the user’s very own mobile phone. The device uses a microcontroller to accept the sensor inputs and generate an audio signal indicative of the data acquired by the sensors and an audio jack which on inserting into the phone acts as a channel to transfer the data collected by the sensors to the cell phone. This data acquired from the sensors is fed to the microphone jack of the cell phone which is then processed by a mobile application and decoded sensor values are displayed on the cell phone. The ultra-low cost nature of the technology enables new additional applications like: On-The-Spot Soil Testing, Home Automation, Traffic Data Capture and Health Data Capture, etc. at disruptive prices.

Keywords—Data Acquisition, Digital Signal processing, Fast Fourier Transform, Spatio-Frequency Encoding, Time Division Multiplexing, 3.5 mm Audio jack.

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