

Low-Cost IoT System for Monitoring Ground Propagation Waves due to Construction and Traffic Activities to Nearby Construction

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Abstract : Due to the high cost, specialized dynamic measurement devices for industrial lands are difficult for many colleges to equip for hands-on teaching. This study connects a dynamic measurement sensor and receiver utilizing an inexpensive Raspberry Pi 4 board, some 24-bit ADC circuits, a geophone vibration sensor, and embedded Python open-source programming. Gather and analyze signals for dynamic measuring, ground vibration monitoring, and structure vibration monitoring. The system may wirelessly communicate data to the computer and is set up as a communication node network, enabling real-time monitoring of background vibrations at various locations. The device can be utilized for a variety of dynamic measurement and monitoring tasks, including monitoring earthquake vibrations, ground vibrations from construction operations, traffic, and vibrations of building structures.

Keywords : sensors, FFT, signal processing, real-time data monitoring, ground propagation wave, python, raspberry Pi 4

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