

TEXAS INSTRUMENTS: WIRELESS SENSING SYSTEM FOR INTELLIGENT CONCRETE CURING

There is currently no reliable data driven method of tracking the completion of the concrete curing process. Applying pressure to concrete prematurely has the potential to cause severe damage. Ideally, the curing process could be monitored by embedding multiple sensors within the concrete interior. Through wireless transmission we can receive, interpret, and provide this data to the user.

Utilizing the MAVRK and uMAVRK platforms provided by Texas Instruments, along with multiple software elements, and signal conditioning circuitry, our team was able to prototype an effective design that extracts temperature and humidity readings from the curing concrete and display this data on to a centralized unit that is easily accessible by an end user. The decision to officially claim the concrete as cured will be left up to the end user.

The final system is comprised of a sensor module, uMAVRK and the MAVRK. The sensor module interfaces directly with the uMAVRK. This PCB module houses sensors for humidity and temperature data acquisition as well as signal conditioning circuitry. The uMAVRK converts the analog sensor information into a digital signal and transmits this information to the MAVRK via a RF UART. The MAVRK is programmed to accept data from the uMAVRK and display this data on a host computer.

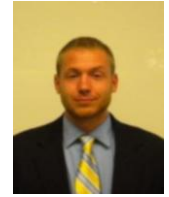
<http://www.egr.msu.edu/classes/ece480/capstone/fall11/group05/>



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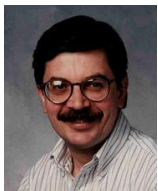
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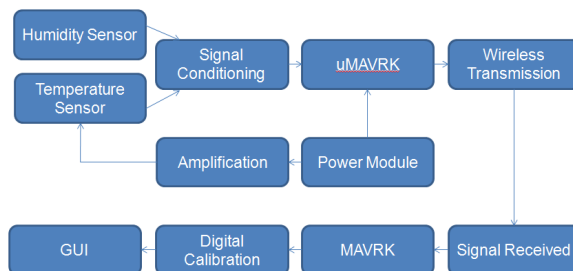
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