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Multi-sensing node architecture for water quality monitoring

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Instrumentation Viewpoint	2011	
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Abstract/Resumo

This work presents a multi-sensing node architecture designed and implemented for water quality (WQ) assessment. Each measuring node includes temperature, conductivity and turbidity sensing channels. Particular design of the sensing devices and of the system's base station software, as well as the periodic calibration of the sensors followed by upgrading of voltage to water quality conversion algorithms through the data stored on a SDcard assure high measurement accuracy. Using a 2XRS232 to Ethernet converter and an Ethernet bridge, the data from the WQ measurement node and the node localization, delivered by a GPS unit, are wirelessly transmitted to the base station. Embedded software was developed for the PIC18F4520 microcontroller using the MPLAB C18 Compiler from Microchip to implement data acquisition, SD card data reading, primary processing, and data communication. Additional LabVIEW software implemented at the base station level includes data communication, data logging and graphical representation of the WQ data from selected monitoring nodes.

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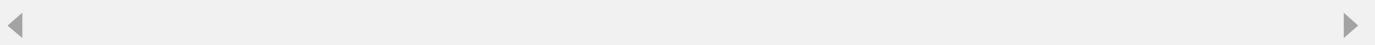
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Palavras-chave

Water quality monitoring, Embedded systems, Conductivity, Turbidity, Temperature, Geographic information system

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