Development of a Code for Functionality in Multi-Level Printed Circuit Boards

Wireless sensor networking offers the opportunity to make sensor measurements in harsh environments and remote locations, collect the sensor data at a central repository, and make the data available to anyone with network access. This research project involves the integration of sensor technology, wireless communications, and computer networking. My role in the research project includes data collection and evaluation, and checking out wireless communications hardware. The hardware to be used in the evaluation was newly designed RF (Radio Frequency) boards for use in a wireless communications transceiver prototype. A program had to be developed to test the boards for correct voltage tolerances (voltage check-out), accuracy in the files downloaded to the board while making sure it read back matching values (JTAG check-out), and verifying that the SPI lines on the RF board were toggling as desired (RF board check-out). An instrumentation interface was initially created in LabVIEW, but MATLAB was chosen as the software that would be more efficient in obtaining the data that was needed. The Instrument Control Toolbox in MATLAB was necessary for communication with instruments supporting the GPIB interface. This research in ensuring that these boards will function as intended is just a small part of a larger project to accelerate the examination of newly designed RF boards. Future workers who use RF boards will conserve time and energy in seeing if the boards are working properly by using this program.

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