Matthew Verber

Electronics Engineer, Electronics Design Facility

Kenan Labs C249

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Research and Development Interests

Electrochemical instrumentation, iontophoresis instrumentation, digital feedback control systems, signal processing (denoising/filtering), image processing, data analysis, system simulation, algorithm and software development.

My interests are focused on embedded systems and signal processing. As an undergraduate and master's student, I completed classes on digital design, embedded software development (primarily in C), and digital signal processing. At GE Healthcare, I helped develop a patient-worn telemetry transmitter, which involved designing and implementing algorithms for a Texas Instruments DSP. At the Medical College of Wisconsin, I expanded my signal processing and statistical analysis skills by working with fMRI data. At UNC, I work on a variety of projects, including those that require algorithm development and software implementation.

Professional Background

Electronics Engineer, Electronics Design Facility, UNC-Chapel Hill (2010-present), fMRI Data Analyst, Medical College of Wisconsin (2002-2010), Design Engineer, GE Healthcare (1999-2002).

Research and Development Synopsis

The Electronics Design Facility provides research support for a myriad of technologies across campus as well as for organizations world-wide. Technologies include electrochemistry, mass spectrometry, nuclear magnetic resonance, We are currently involved in the design of RF systems for miniature mass spectrometers, HV RF systems for research mass spectrometers, low noise electronics for nano-scale DNA and molecule detection, hardware and algorithms for image acquisition and analysis, algorithms for denoising spectrometry data, hardware and algorithms for audio signal acquisition and processing, magnetics and magnetic materials for high-efficiency and low noise systems, among others.

In addition to UNC, our customers for this design support include IBM, Merck, Mayo Clinic, Biofluidica, Targacept, 908 Devices, Lawrence Livermore National Labs, NIH-NIDA, Howard Hughes Medical Institute, University of Leicester, Polish Academy of Science, Korea Institute of Science and Technology, MIT, Yale, Emory, UT Health Science, Univ. of Virginia, Northwestern University, NCSU, ETSU, Kansas State Univ., Univ. of Kansas, Vanderbilt Univ., Albany Medical Center, Duke Univ., Medical College of Wisconsin, SUNY Buffalo, Univ. of Pittsburgh, Univ. of Minnesota, Univ. of Washington, Univ. of Maryland, George Mason Univ,. Roanoke College, Univ. of Maryland, UCLA, Univ. of CO, among others.