spinlab Overview

D. Richard Brown III

Worcester Polytechnic Institute

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Welcome to WPI
WPI ECE Department
WPI ECE Labs & Centers

Cryptography and Information Security (CRIS) Laboratory
Faculty: Berk Sunar

Mission: Address security and reliability related problems at various levels by developing new security technologies to ensure the safety of all facets of the communication infrastructure.
About spinlab

Signal Processing and Information Networking Laboratory
spinlab.wpi.edu

Current research topics:

- Cooperative communication systems
- Resource allocation
- Energy efficient communication
- Fundamental limits on communication
- Game theoretic analysis of networks
- Distributed MIMO, e.g. distributed transmit beamforming

Current graduate students:

- Min Ni (PhD)
- Joshua Bacon (PhD)
Application: Sensor Network Reachback
Application: Multi-Basestation Cellular
Application: Precision Electronic Warfare
Some Recent spinlab graduates

Yizheng Liao: MS May 2011.

Donald Richard Brown III (Rick) joined Worcester Polytechnic Institute in 2000 as an Assistant Professor in the department of Electrical and Computer Engineering and founded spinlab in 2002. He was promoted to Associate Professor in 2006. He received the Ph.D. degree in 2000 from Cornell University, Ithaca, NY, and the M.S. and B.S. degrees in 1996 and 1992 from The University of Connecticut, Storrs, CT, all in Electrical Engineering. He was also employed by the General Electric Company, Plainville, CT as a Development Engineer from 1992 to 1997. In addition to his current faculty appointment, Rick Brown has held consulting contracts with several companies for a variety of different projects including OFDM receiver design and signal analysis, interference mitigation in digital subscriber loops, and network timing recovery and synchronization. He has also served as an expert witness and technical consultant for wireless communication intellectual property litigation. A summary of his curriculum vitae.

Joshua Bacon received a B.S. in both Electrical Engineering and Applied Mathematics from the University of Rhode Island in May 2007. He also received his M.S. in Mathematics from the University of Rhode Island in May 2010. He joined the spinlab in August of 2010 as a PhD student. His interests are in the area of applied mathematics, statistical signal processing, digital signal processing, and Fourier analysis.

Min Ni received her BS in Electrical Engineering from Sichuan University, China in July 2007. She joined spinlab in August of 2009 as a Ph.D. student. Her research interests are in the area of multiple-input multiple-output (MIMO) systems and theoretic analysis of cooperative transmission systems.
Some good courses for students interested in this research

- ECE502: Analysis of probabilistic signals and systems
- ECE503: Digital signal processing
- ECE504: Analysis of deterministic signals and systems
- ECE531: Detection and estimation
- ECE5311: Information theory and coding
- ECE5312: Modern Digital Communication Systems
- ECE581/CS533: Modeling and performance evaluation of networks
- ECE539: Selected topics in comm theory and signal processing
- ECE630: Advanced topics in signal processing
- MA501: Engineering mathematics
- MA503: Lebesgue Measure and Integration
- MA524: Convex Analysis and Optimization
- MA542: Regression Analysis
Interested in spinlab?

Visit http://spinlab.wpi.edu/publications.html

Read some of our work. Learn about what we are doing. Is this interesting to you?

Take a course with me:

- ECE4703: Real-time DSP (B-term 2011)
- ECE503: Digital signal processing (Spring 2012)
- ECE598: Directed research.

If you are interested, motivated, and do well in my course, I would be happy to talk with you about research opportunities in spinlab.