

Sudhanshu Gaur

Mobile & Portable Radio Research Group
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Objective

Gaining the necessary knowledge and skills for a career in Wireless Communications and Networking by pursuing a PhD Degree.

Education

- **Virginia Tech**, Blacksburg VA, Master of Science, Electrical and Computer Engineering Expected Jan 2003
GPA- 3.86/4.0
- **Indian Institute of Technology (IIT)**, Kharagpur India, B.Tech, Instrumentation Eng. June 2000
GPA- 8.46/10.0

Research

- **Mobile & Portable Radio Research Group (MPRG)**, Virginia Tech Sept 2001-Present
Thesis Advisor: Dr. A. Annamalai
Thesis Topic: A mathematical framework and a design tool for analyzing performance of several hybrid diversity combining methods in generalized fading channels.
- **BTech Thesis**, IIT Kharagpur Aug 1999-April 2000
Thesis Topic: Ethernet & Token Bus Mixed Protocol (RETHEP)
 - Devised a scheme of Ethernet-Token Ring mixed protocol for Real Time Sessions in LANs.
 - The scheme is based on transfer of one protocol to another depending on network load.
 - Performed simulations and analyzed performance vis-à-vis existing protocols on OPNET networking software.

Publications

- S. Gaur, A. Annamalai, "Some Integrals Involving the Marcum Q-Function with Application to Error Probability Analysis of Diversity Receivers," Submitted to IEEE Transactions on Vehicular Technology, 2002.
- S. Gaur, A. Annamalai, "On the Receiver Design for UWB Systems," Submitted to IEEE Communication Letters, 2003.
- S. Gaur, A. Annamalai, "MGF-Based Mathematical Framework for Dual Diversity Equal Gain Combining Analysis over Correlated Rayleigh and Nakagami-m Fading Channels," To be submitted to IEEE Transactions on Vehicular Technology, 2003.
- S. Gaur, A. Annamalai, "A General Framework for Performance Evaluation of Hybrid Partitioned Diversity Combining Receiver over Wireless Channels," To be submitted to IEEE Transactions on Communications, 2003.

Experience

- **DARPA/Boeing Future Combat Systems (FCS) Project**, MPRG, Virginia Tech Sept 2002-Present
 - Development of a high fidelity simulator for accurately modeling the time-varying physical channel conditions in the network performance.
 - Study of the convergence behavior of adaptive beam-forming and adaptive interference nulling.
- **Graduate Research Assistant**, Dr. M.T. Jones, ECE Dept, Virginia Tech Dec 2001-Aug 2002
 - Assisted in the development of course material for '*Engineering Problem Solving with C++*'.
 - Developed a real-time interface (written in VC++ 6.0) to interface directly to the Lego Mindstorms RCX 2.0.
- **Enfora Inc**, Plano, TX May 2001-Jun 2001
Onsite Support Engineer
 - Integration of Texas Instrument's TCS2100™ GPRS chipset with Sasken's GPRS protocol stack.
 - It involved design and implementation of mobile physical abstraction layer to provide the mapping between physical link layer primitives and the MAC layer.
 - Conformance testing of GPRS MAC layer in compliance with SMG-31 ETSI specs.
- **Sasken Communication Technologies**, Bangalore, India. Jun 2000-Jul 2001
Software Engineer in Wireless Communication Technology Group
 - Designed and developed a substantial portion of Medium Access Control (MAC) layer for GPRS protocol stack.
 - Actively participated on the design and implementation issues of Mobility handling, Cell selection/reselection, Handoffs and MAC interaction with physical layer.

- Interacted closely with clients (Enfora Inc., and Sierra Wireless Inc.).

Course Projects

- Implementation and performance analysis of CMA algorithm on a VIPER test bed. (Software Radios)
- Performance analysis of Digital Automatic Gain Controller for spread spectrum signals in a Rayleigh channel (Software Radios).
- Analysis of low rate superorthogonal convolutional codes in a UWB communication system. (Coding Theory).
- Implementation of LCR based *Velocity Estimator* for narrowband mobile communication systems using a TI TMS320C67 DSP (DSP Implementation of Communication Systems).
- Implementation of a Wavelet-based Covert Information Transmission Technique using Ptolemy/SystemC. (Design of Systems on a Chip).
- Implementation and performance evaluation of UDP-based audio streaming media (Computer & Net. Architecture).

Computer Skills

- Programming- *Extensive experience* in C/C++, MATLAB, OPNET, Perl, Tcl/Tk, Network/Socket programming.
- Platforms- Linux, Unix, Sun, Windows
- Technologies- GSM, GPRS, UMTS (WCDMA), UWB, 802.11a
- Others: TI TMS320C67, CCS 2.0, CVS & Aegis for configuration management, Purify, Purecoverage.

Honors and Activities

- Reviewer for two **IEEE** journals: IEEE Transactions on Vehicular Technology and IEEE Communication Letters.
- Nominated for best BTech thesis in the EE department at IIT Kharagpur.
- Represented IIT Kharagpur in Athletics at inter-IIT sports meet.