

Ph.D. Student  
Electrical Engineering Department  
Viterbi School of Engineering  
University of Southern California  
<http://www.scf-usc.edu/~yerramal>

EEB 522  
3740 McClintock Avenue  
Los Angeles, CA 90089  
Phone: +1 (213) 400 0883  
E-mail: [srinivas.yerramalli@usc.edu](mailto:srinivas.yerramalli@usc.edu)

## Topics of Interest

Wireless Communications; Information Theory; Signal Processing; Optimization

## Education

**Ph.D. Student in Electrical Engineering** Aug 2008 – Present  
University of Southern California, Los Angeles, CA

- Advisor: Prof. Urbashi Mitra
- Research Topic: Communication over wideband Underwater Acoustic Channels

**M.S. in Electrical Engineering** Aug 2007 – Dec 2008  
University of Southern California, Los Angeles, CA

- Specialization: Communications and Signal Processing

**B.Tech in Electronics and Communication Engineering** *with Honors* July 2003 – Jun 2007  
International Institute of Information Technology, Hyderabad (IIIT-H)

- Advisor: Prof. V Umapathi Reddy
- Emphasis: Communications and Signal Processing

## Honors and Awards

- **IIIT Gold Medal** for the best academic performance for class of 2007 (150 students)
- **Dean's Merit List**, IIIT-H, 2003 - 2007
- **Prathiba Scholarship**, Government of Andhra Pradesh, India 2003 - 2007
- **Gold Medal** from President of India for excellent performance in AIEEE 2003
- **NTSE Scholarship** from Government of India 2001 - 2007

## Research

- **University of Southern California, Los Angeles, California** Aug 2008 – Present  
*Research Assistant* in the Department of Electrical Engineering department with my Ph.D. advisor Prof. Urbashi Mitra. My primary research is on developing receivers for communication over Doppler spread underwater acoustic channels. Research interests also include network topology design for underwater sensing applications and developing abstracted communication models for mobile robot coordination and planning.
- **Northeastern University, Boston, Massachusetts** Sept 2009 – May 2010  
*Visiting Research Assistant* in the Department of Electrical and Computer Engineering with Prof. Milica Stojanovic. Worked on a new algorithm for Doppler compensation in wideband communications with applications to underwater signaling, frequency offset estimation, target speed estimation for radars and vehicle-to-vehicle communications.

- **IIIT, Hyderabad, India** Jun 2005 – April 2007  
*Research Assistant* in the Communications Research Center with Prof. V Umapathi Reddy. Worked on deriving bounds for the probability of detection error in 802.11a/g OFDM WLAN systems in the presence of residual frequency offset and channel estimation errors.

## Internships

- **Microsoft Research, Bangalore, India** Jun 2011 - Aug 2011  
*Research Intern* in the Mobility, Networks and Systems (MNS) group under the supervision of Dr. Krishna Chintalapudi and Dr. Bozidar Radunovic (MSR, Cambridge). Working on the design of a next generation WiFi system which eliminates several inefficiencies of current systems.
- **Qualcomm Inc, Santa Clara, California** May 2010 - Aug 2010  
*Summer Intern* under the supervision of Dr. Madihally (Sim) Narasimha, Senior Director of Technology, Qualcomm and Consulting Professor of Electrical Engineering at Stanford University. Worked in modeling and implementation of various receiver front end distortions in Qualcomm's WCDMA simulator and characterized the impact of distortions on system performance. Made recommendations for switching between several receiver designs by analyzing the system performance results.
- **Hellosoft Inc, Hyderabad, India** May 2006 - July 2006  
*Summer Intern* under the supervision of Dr. V Umapathi Reddy, chief scientist of Hellosoft. Worked on implementing channel estimation algorithms and characterizing performance with tight bounds on error probability in the presence of channel and receiver impairments.

## Patents

1. Partial FFT Demodulation and Combining: A Method for OFDM Detection on Doppler-Distorted Channels, information disclosure filed and patent application in progress

## Publications

### Journal Papers (in preparation/in review)

2. **Srinivas Yerrmalli**, Rahul Jain and Urbashi Mitra, *Coalition Games for Transmitter Cooperation in Wireless Networks*
1. **Srinivas Yerramalli**, Milica Stojanovic and Urbashi Mitra, *Partial FFT Demodulation and Combining: A Method for OFDM Detection on Doppler-Distorted Channels*, **to be submitted** to IEEE Transactions on Wireless Communications, Aug 2011.

### Journal Papers (published)

1. **Srinivas Yerramalli** and Urbashi Mitra, *Optimal Resampling of OFDM Signals for Multi-Scale Multi-Lag Underwater Acoustic Channels*, in IEEE Journal of Oceanic Engineering, Jan 2011.

### Conference and Workshop Papers

11. **Srinivas Yerramalli**, Rahul Jain and Urbashi Mitra. *Coalition Games for Transmitter Cooperation over Wireless Networks*, in Proc. of the International Symposium on Information Theory (ISIT), St.Petersburg, Russia, July 2011.

10. Geoffrey A Hollinger, **Srinivas Yerramalli**, Gaurav S Sukhatme and Urbashi Mitra. *Towards Communication Aware Multi Robot Coordination for Underwater Information Gathering*, in Proc. of the International Conference on Robotics and Automation (ICRA), Shanghai, China, May 2011.
9. **Srinivas Yerramalli**, Milica Stojanovic and Urbashi Mitra. *Carrier Frequency Offset Estimation for Uplink OFDMA using Partial FFT Demodulation*, in Proc. of the IEEE Global Communications Conference (Globecom), Miami, Florida, Dec 2010.
8. **Srinivas Yerramalli**, Milica Stojanovic and Urbashi Mitra. *Analysis of Partial FFT Demodulation for Doppler Distorted OFDM Signals*, in Proc. of the IEEE Asilomar 2010, Pacific Grove, California, Nov 2010 (Invited Paper).
7. **Srinivas Yerramalli**, Milica Stojanovic and Urbashi Mitra. *Data Detection Techniques for OFDM Signals over Doppler-Distorted Channels*, in Proc. of the 5<sup>th</sup> International Workshop on Underwater Networks (WuWNET) (Short Paper), Woodshole, Massachusetts, Oct 2010.
6. **Srinivas Yerramalli**, Milica Stojanovic and Urbashi Mitra. *Partial FFT Demodulation: A Detection Method for Doppler distorted OFDM systems*, in Proc. of the IEEE International Workshop on Signal Processing Advances for Wireless Communications (SPAWC), Marrakech, Morocco, June 2010.
5. **Srinivas Yerramalli** and Urbashi Mitra. *Blind Resampling Parameter Estimation for Doubly Selective Underwater Acoustic Channels*, in Proc. of the IEEE International Symposium on Circuits and Systems (ISCAS), Paris, France, May 2010 (Invited Paper).
4. Daniel N Liu, **Srinivas Yerramalli** and Urbashi Mitra. *On Efficient Channel Estimation for Underwater Acoustic OFDM Systems*, in Proc. of the 4<sup>th</sup> International Workshop on Underwater Acoustic Networks (WuWNET), Berkeley, California, Nov 2009.
3. **Srinivas Yerramalli** and Urbashi Mitra. *Optimal Power Allocation and Doppler Compensation in Cooperative Underwater Networks using OFDM*, in Proc. of IEEE/MTS Oceans, Biloxi, Mississippi, Oct 2009.
2. Filippo Arrichiello, Daniel N Liu, **Srinivas Yerramalli**, Arvind Pereira, Jnaneshwar Das, Urbashi Mitra and Gaurav Sukhatme. *Effects of underwater communication constraints on the control of marine robot teams*, Proceedings of the Second International Conference on Robot Communication and Coordination (Robocomm), Odense, Denmark, April 2009.
1. **Srinivas Yerramalli** and Urbashi Mitra. *On Optimal Resampling for OFDM Signaling in Doubly-Selective Underwater Acoustic Channels*, Proc. of IEEE/MTS Oceans, Quebec City, Canada, Sept 2008.

## Presentations

2. Communications Over Highly-Time Varying Underwater Acoustic Channels
  - Invited Talk at Indian Institute of Science(IISc), Bangalore India, July 2011.
1. On Optimal Resampling for OFDM Signaling in Doubly Selective Underwater Acoustic Channels
  - IEEE Underwater Acoustic Signal Processing Workshop, West Greenwich, RhodeIsland, Oct 2009.

## Teaching Experience

Department of Electrical Engineering, University of Southern California, Los Angeles, CA

*Teaching Assistant*

- Communication Theory (EE 564)

Spring 2009

- Communication Theory (EE 564) Fall 2008

Electronics and Communication Engineering, IIIT, Hyderabad  
*Teaching Assistant*

- Probability and Random Processes (ECE 230) Monsoon 2005
- Electronic Circuits (ECE 103) Spring 2005

Electronics and Communication Engineering, IIIT, Hyderabad  
*Laboratory Assistant*

- Electronic Circuits (ECE 103) Spring 2005

## Students Supervised

- **Mr Sun Peng** (Summer student from Tsinghua University under the Research Experience for Undergraduates (REU) program, Fall 2009)

## Professional Service - Peer Reviews

- IEEE Transactions on Wireless Communications
- IEEE Journal of Oceanic Engineering
- IEEE Journal of Selected Topics in Signal Processing
- EURASIP Journal on Advances in Signal Processing
- IEEE International Communications Conference (ICC 2011)

## Course Work

**Basic Graduate:** Linear Algebra, Probability Theory, Random Processes, Detection and Estimation Theory, Communication Theory, Error Correcting Codes, Statistical and Adaptive Signal Processing, Information Theory, Computer Networks, Broadband Network Architectures, Principles of Real Analysis

**Advanced Graduate:** Random Processes II, Multi Rate Signal Processing, Convex Optimization and Applications, Network Economics and Game Theory, Multi-terminal Information Theory, Network Coding

## Skills

**Programming:** C, C++, Perl

**Software Defined Radios:** Lyrtech SDR platform

## Academic Projects

- Coalition Games for Cooperation over the Gaussian MAC channel
- Joint channel and carrier frequency offset tracking for OFDM using Extended and Unscented Kalman Filter
- Design and implementation for adaptive IIR filter for howling control in public address systems
- Implementation of a virtual microprocessor (Motorola MC6802) in C (Won first prize in a software development contest at Felicity 2006, IIIT-H, as a teaching aid for the microprocessors course)
- Verilog implementation of a multiplier-less FFT using SOPOT coefficients