

Thomas A. Courtade

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Education

B.S. Electrical Engineering, Michigan Technological University, 2007.

Focus Area: Wireless Communications and Signal Processing.

Honors: Summa Cum Laude.

GPA: 4.00.

M.S. Electrical Engineering, University of California, Los Angeles, 2008.

Research Topic: Asymptotic Convergence to a Consensus in Random Time-Varying Networks.

Advisor: Prof. Richard D. Wesel.

GPA: 4.00.

Ph.D. Electrical Engineering, University of California, Los Angeles, *expected* 2012.

Advisor: Prof. Richard D. Wesel.

GPA: 4.00.

Research Interests

Communication Networks, Information Theory, and Optimization

Academic & Work Experience

UCLA, Department of Electrical Engineering

Graduate Student Researcher, UCLA Communication Systems Laboratory, Fall 2007 - Present.

Teaching Assistant, Graduate Channel Coding Theory, Prof. Richard D. Wesel, Summer 2008.

Michigan Technological University, Department of Electrical Engineering

Group Leader for Senior Design Project: Vehicle Noise Fingerprinting - Method and System, 2007.

Member of MTU Research Scholars Program, 2003-2007.

Member of Undergraduate Student Advisory Committee, 2003-2004.

Rockwell Collins - Advanced Technology Center, Cedar Rapids, IA

Engineering Co-op, Total of 15 months from 2004-2007.

Relevant Coursework

UCLA, Department of Electrical Engineering

Information Theory, Channel Coding Theory, Matrix Analysis, Linear and Nonlinear Optimization, Adaptive Filtering.

UCLA, Department of Mathematics

Applied Combinatorics and Graph Theory, Probabilistic Methods in Combinatorics, Real Analysis (Including measure and integration theory as well as basic functional analysis).

Michigan Tech, Department of Electrical Engineering

Wireless Communications, Communication Theory, Digital Signal Processing.

Research

Work in Progress

Cooperative information sharing in distributed wireless networks, UCLA.

Optimal cross-layer coding for wireless fading channels, UCLA.

Previous Work

Convergence to a consensus in random time-varying distributed networks, UCLA.

Digital Beamforming system design and implementation, Rockwell Collins (Internal R&D).

Tactical ad-hoc wireless network design and implementation, Rockwell Collins (Sponsored by DARPA).

Vehicle Noise Fingerprinting - method and system for fusing and analyzing powertrain sensor data, Michigan Tech (Sponsored by Ford Motor Company).

Publications

Conference Papers

T. A. Courtade and R. D. Wesel, "A Cross-Layer Perspective on Rateless Coding for Wireless Channels". To Appear at IEEE International Conference on Communications, 2009.

A. Marinoni, T. A. Courtade, and R. D. Wesel, "Spectrally Efficient LDPC Coded Modulations". To appear at GTTI 2009: sessione Trasmissione, Parma, Italy, June 23-25, 2009.

Textbook Chapters

T. A. Courtade and S. A. Zekavat, Textbook Chapter: "Multiple Access Schemes for Wireless Communication Systems". Written for a textbook on wireless communications under preparation by Seyed Alireza (Reza) Zekavat, Associate Professor of Electrical Engineering at Michigan Technological University.

Papers Under Review

T. A. Courtade and R. D. Wesel, “A Cross-Layer Perspective on Rateless Coding for Wireless Channels”. Submitted to IEEE Transactions on Communications, 2009.

Patents

T. A. Courtade and D. J. Jensen, “Method for Efficiently Computing the Beamforming Weights for a Large Antenna Array”. U.S. Patent #7,414,578. Assigned August 19, 2008.

D. J. Jensen and T. A. Courtade, “Digital Beamforming Method and Apparatus for Pointing and Null Steering Without Calibration or Calculation of Covariance Matrix”. U.S. Patent Application filed June, 2008.

Teaching & Mentoring Experience

Teaching Assistant for the graduate level Channel Coding course, UCLA, Spring 2009.

Teaching Assistant for the online graduate level Channel Coding course, UCLA, Summer 2008.

Mentored an undergraduate student from CEED (Center for Excellence in Engineering and Diversity), UCLA, 2007-2008.

Tutor for various undergraduate engineering and mathematics courses, Michigan Tech, 2004-2007.

Volunteer tutor for middle school children needing additional help in math and science, Michigan Tech, 2004-2005.

Professional Activities

Professional Memberships

Graduate Student Member, IEEE.

Student Member, IEEE Information Theory Society.

Student Member, IEEE Communications Society.

Student Member, SIAM.

Conferences and Workshops Attended

Information Theory and Applications Workshop, University of California, San Diego, January 27–February 1, 2008.

Information Theory and Applications Workshop, University of California, San Diego, February 8–13, 2009.

IEEE International Conference on Communications, Dresden, Germany, June 14–18, 2009.

Honors & Awards

Fellowships & Scholarships

Dean's Fellowship, UCLA, 2009.

University Fellowship, UCLA, 2007-2008.

Robert C. Byrd Honors Scholarship, 2003-2007.

Board of Control Scholarship, Michigan Tech, 2003-2007.

Walter T. Anderson Electrical Engineering Scholarship, Michigan Tech, 2006-2007.

Michigan Merit Scholarship, 2003-2005.

Michigan Society of Professional Engineers Scholarship, 2003-2004.

Awards

Ranked First in the Ph.D. Preliminary Exam in the Signals and Systems Area, UCLA, 2008.

NSF Graduate Research Fellowship Program, Honorable Mention, 2008 & 2009.

Carl S. Schjonberg Award for Outstanding Senior in Electrical Engineering, Michigan Tech, 2007.

Industry Innovation Award for Best Senior Design Project, Michigan Tech, 2007.

Class of 1983 Award, Michigan Tech, 2006.

Honorary Societies

Phi Kappa Phi, 2006.

Tau Beta Pi, 2006.

Miscellaneous

Computer Skills

C, C++, Java, VHDL, Linux, Matlab, Mathematica, L^AT_EX.