

SenSIP Seminar Series

LDPC Code Design for the Two-User Gaussian Multiple Access Channel

Presenter: Shahrouz Sharifi, PhD

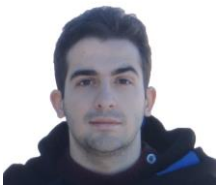
October 16 (Friday), 2015, 10:30AM

Room: GWC 487

Abstract

We study the problem of LDPC code design for the two-user Gaussian multiple access channel. Gaussian assumption is commonly used in the literature to design codes for such channel. We utilize two interacting component decoders at the receiver and analytically derive the PDFs of the log-likelihood-ratios fed to the component decoders. It is illustrated through examples that the PDFs do not resemble Gaussian densities, instead they can be well approximated with Gaussian mixture distributions. We propose two methods of computing the decoding performance of the LDPC codes based on Gaussian mixture assumption and incorporate those for code optimization. The optimized codes are shown to outperform those designed via existing methods achieving rates close to the boundary of the capacity region.

Biography:



Shahrouz Sharifi received the B.S. degree from University of Tehran, Iran, in 2009, the M.S. degree from Sharif University of Technology, Iran, in 2011 and his Ph.D degree from Arizona State University in 2015, all in electrical engineering. His research interests include various topics in information theory and wireless communications with a particular focus on coding techniques.

Refreshments

Upcoming Student Seminars:

Alan Wisler, Oct. 23, 2015

Yu Rong, Nov. 13, 2015

Jinjin Li, Nov. 20, 2015

Ahmad Salim, Dec. 4, 2015

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