IEEE Maine Communications and Computer Societies Joint Chapter

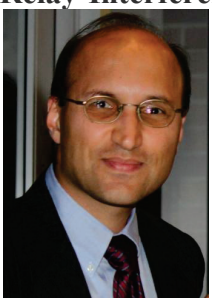
Decoding of binary codes in the presence of channel mismatch: correction of the LLRs

Prof. Leszek Szczecinski, INRS, Montreal, Canada

Abstract: In this talk we have a look at the strategies of dealing with imperfect probabilistic models of data, in particular, with regard to the use of these "mismatched" models for detection/decoding of transmitted information. The main goal of our analysis is to obtain an insight into method of correction of the mismatch with the final objective being the improvement of decoding reliability. We will a general overview at the strategies and criteria of mismatch correction and we will focus on the correction of the mismatched logarithmic likelihood ratios (LLRs) used by the binary decoders in the so-called bit-interleaved coded modulation (BICM) receivers. We will also present the application of the proposed approaches to the correction of the LLRs in the LDPC decoders.

Bio: Leszek Szczecinski obtained M.Eng. degree from the Technical University of Warsaw in 1992, and Ph.D. from INRS-Telecommunications, Montreal in 1997. From 1998 to 2001, he held position of Assistant Professor at the Department of Electrical Engineering, University of Chile. He is now Associate Professor at INRS-EMT, University of Quebec, Canada and Adjunct Professor at Electrical and Computer Engineering Department of McGill University. In 2009-2010 he was a Marie-Curie Research Fellow with CNRS, Laboratory of Signals and Systems, Gif-sur-Yvette, France. His research interests are in the area of communication theory, modulation and coding, ARQ, wireless communications, and digital signal processing. L. Szczecinski coauthors with Alex Alvarado a book "Bit-interleaved coded modulation: fundamentals, analysis, and design".

Distributed Beamforming in Wireless Relay-Interference Networks



Prof. Hamid Jafarkhani, Univ of California, Irvine

Abstract: First, we present a general review of beamforming in MIMO with an emphasis on the role of quantized feedback. We continue with a general description of wireless relay networks and discuss the existing methodologies. We discuss the distributed nature of the network and present distributed beamforming methods that use full channel state information. Then, we address the role of quantized feedback in relay networks. Finally, we discuss the effects of interference in wireless relay networks and the design of quantized feedback in wireless relay-interference networks.

Bio: Hamid Jafarkhani received the B.S. degree in electronics from Tehran University in 1989 and the M.S. and Ph.D. degrees both in electrical engineering from the University of Maryland at College Park in 1994 and 1997, respectively. He joined AT&T Labs-Research as a Senior Technical Staff Member in Aug. 1997. Later he was promoted to a Principal Technical Staff Member. While at AT&T Labs, he and his colleagues invented space-time block coding, a MIMO technology, that has become an active area of research and is widely used in practice. He was with Broadcom Corp. as a Senior Staff Scientist from July 2000 to Sept. 2001. Currently, he is a Chancellor's Professor in the Department of Electrical Engineering & Computer Science at the University of California, Irvine where he is also the Director of Center for Pervasive Communications & Computing and the Conexant-Broadcom Endowed Chair. Hamid Jafarkhani is one of the top 10 most-cited researchers in the field of "computer science" during 1997-2007.

Date: Friday May 1st, 2015 at 2:00-4:00pm
Location: Arthur St John Hill Auditorium, Barrows Hall, UMaine, Orono
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