Soft Iterative Equalization and Decoding for Alamouti Encoded MIMO Signals

by Magnus Lundberg Nordenvaad, Luleå University of Technology

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Time: 11:00 am (refreshment starts at 10:45am)
Place: 202 ECEC, NJIT

About the Speaker

Magnus Lundberg Nordenvaad was born in Luleå, Sweden, in 1973. He received the M.Sc. degree in Computer Science and Engineering in 1998 from Luleå University of Technology (LTU), Luleå, Sweden, and the Ph.D degree in Signal Processing in 2003 from the School of Electrical and Computer Engineering, Chalmers University of Technology, Gothenburg, Sweden. He has held visiting positions at Purdue University and Colorado State University. Currently Dr Lundberg Nordenvaad is an Assistant Professor with the Department of Computer Science and Electrical Engineering, LTU and holds a research position at the Swedish Defense Research Agency.

His research interests lie in statistical signal processing and how it applies to digital communications, radar, sonar, land-mine detection, and high-level power estimation in CMOS architectures. Dr Lundberg Nordenvaad has received several awards and grants for his research. These include the 1998 "MD110 User-group award" for the best Masters Thesis in the telecommunications area in Sweden that year and a postdoctoral scholarship award from the Swedish Research Council.

About the Talk

In this presentation s soft input/soft output linear equalizer for Alamouti encoded MIMO signals will be proposed. The derived structure allows for simultaneous equalization of MIMO channels along with decoding of Alamouti coded signals. The equalizer/decoder is used within the turbo equalization framework to exploit the complex and rich characteristics of the acoustic underwater channel. The proposed scheme can operate at very low Signal-to-Noise Ratio (SNR) levels enabling high transmission rates over long distances. We investigate the viability of the technique by using simulation examples and by studying its behavior for a real scenario, using data collected in the Baltic sea.

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