

ECE 600 Seminar, October 4, 2010, 3:45 – 4:45PM, EH 1610

Title: The Carbon-Silicon Bond - How the Humans Came to Love Their Electronic Devices

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Abstract:

The last half-century has seen the emergence of a new, nonsentient silicon-based lifeform that now shares the planet with the carbon-based lifeform that has dominated the planet for the past several thousand years. Starting from small seeds planted by Shannon and Bardeen in 1948, this new lifeform has taken its measure of control of the planet in an astonishingly short time. This emergence has been well-noticed, but not fully appreciated.

Our goal is to describe the need to communicate as the force that fed this growth, and the major developments in the mathematics of communication theory that enabled this technology.

This talk will herald the accomplishments of mathematics, engineering, and computer science that have led to this nearly instantaneous re-invention of the planet, to describe a few of the main results of informatics, and to pay tribute to the great innovators who led this (r)evolution. The many developments in the mathematics of modulation and coding will be surveyed.

Bio:

Richard E. Blahut is the Henry Magnuski Professor of Electrical and Computer Engineering at the University of Illinois. He was the Head of that department for eight years, from 2001 to 2009. He also holds the title of Research Professor in the Coordinated Science Laboratory. He was elected to the National Academy of Engineering in 1990. He is a Fellow of the Institute of Electrical and Electronics Engineers. He is the recipient of the IEEE Alexander Graham Bell Medal, the IEEE Claude E. Shannon Award, the Tau Beta Pi Daniel C. Drucker Eminent Faculty Award, and an IEEE Millennium Medal.

Dr. Blahut was born on June 9, 1937 in Orange, New Jersey, USA. He received his B.Sc. degree in Electrical Engineering from the Massachusetts Institute of Technology, M.Sc. degree in Physics from the Stevens Institute of Technology, and Ph.D. degree in Electrical Engineering from Cornell University. His interests include information theory, communication theory, signal processing, optical recording, error-control codes, cryptography, surveillance theory, and image formation.

Blahut was employed in the Federal Systems Division of IBM from 1964 to 1994, where he held the title of IBM Fellow. Blahut designed the error-control code and the decoder algorithm used in the high-speed data link for the U.S. Navy's LAMPS helicopter. His contributions include the development of error-control codes for the transmission of messages to the Tomahawk missile, codes to protect text data transmitted via the U.S. public broadcasting network, and the design of a now widely-used damage-resistant bar code for the British Royal Mail.

Dr. Blahut has authored a series of advanced textbooks and monographs in error-control coding, information theory, and signal processing, including twelve books either published, most recently by Cambridge University Press, or in manuscript form. He served as President of the Information Theory Society of the IEEE in 1982. He was Editor-in-Chief of the IEEE Transactions on Information Theory from 1992 until 1995.