

**Peter Franaszek, Innovator of Digital Data Coding and Storage,
to Receive 2009 Richard W. Hamming Medal**

*Constrained Coding Techniques Have Fueled the Success of CDs and DVDs
for Storing Digital Information*

PISCATAWAY, N.J. – 22 June 2009 – Peter Franaszek, a researcher whose innovative work on data coding set the direction for modern constrained coding and helped increase the storage density of digital media, is being honored by IEEE with the 2009 IEEE Richard W. Hamming Medal. The IEEE is the world's largest technical professional association.

The medal, sponsored by QUALCOMM, Inc., recognizes Franaszek for pioneering contributions to the theory and practice of run-length constrained channel coding for magnetic and optical storage. The award will be presented on 25 June 2009 at the 2009 IEEE Honors Ceremony in Los Angeles, Calif. For the first time, the IEEE Honors Ceremony will be broadcast live on the Web through IEEE.tv (www.ieee.tv).

Widely used in digital recording and communications systems, constrained channel coding puts limitations on the sequence of data streams to allow clock and fast data synchronization. In digital systems, information is typically recorded or transmitted via a sequence of pulses or changes in voltage or luminance levels. These may be regarded as sequences of symbols. Generally, data are mapped on to such sequences through what is called a constrained channel code.

Known for developing codes that not only pushed the theoretical limits but were also practical enough to be implemented in current technology, Franaszek's coding research was aimed at determining fundamental aspects of the constrained codes and developing algorithms for their construction. His pioneering work has served as the basis for key components in the proliferation of hard disk drives, compact discs (CDs), digital versatile discs (DVDs), and the specific codes he developed have been used extensively in commercial data storage and transmission products.

Franaszek was the first to develop practical methods for run-length limited (RLL) codes. RLL codes ensure that the boundary lengths between bits of data are neither too short nor too long so that the data can always be accurately found. This also increases the storage density by enabling the recording media to store the maximum amount of data possible. Franaszek's (2, 7) RLL code found widespread use in disk drives during the 1980s and later in magnetic and optical recording applications. Franaszek also designed the (8B,10B)dc-free code with Albert Widmer. This is a two-state encodable and block decodable code that has been used for Gigabit Ethernet and optical transmission systems.

An IEEE Fellow and a member of the IBM Academy of Technology, Franaszek holds over 60 patents and has published approximately 50 technical papers. His awards include the 1989 IEEE Emanuel R. Piore Award and the 2002 Association for Computing Machinery Paris Kanellakis Theory and Practice Award. He received his bachelor's degree from Brown University, Providence, R.I., and his master's and doctorate degrees from Princeton University, N.J. He is currently a research staff member emeritus for the IBM T.J. Watson Research Center, Yorktown Heights, N.Y.

About IEEE

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