



## **"A Generalization of Information Theory for Real World Unsupervised Learning Computational Intelligence"**

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**Shannon original contribution to theory is revisited for an open and dynamics system, of which animal brain information processing is exemplified by means of biophysics. I prove the necessary and sufficient condition for Duda-Hart sense of unsupervised classifiers is the power of pairs of sensors and an isothermal equilibrium in minimum Helmholtz free energy. Real world CI applications in remote sensing and early tumor detection are given as success stories.**

**Monday, October 11, 2004, 2 p.m. (Refreshments will be provided)  
Room G-31, Emerson Electric Co. Hall, University of Missouri-Rolla**

He received in 1971 **Ph. D. in Physics/Statistical Mechanics** from **Rockefeller University**, New York, N.Y. and worked at **Naval Research Lab** Wash DC in three Divisions: began at **GS-12 Plasma Physics**, **GS-13 Optics**, & **GS-14 EW** over 15 years (1977-1990), and became the Information Science Group Leader of **Naval Surface Warfare Center** at **White Oak** (1990-1996) and at **Dahlgren VA**(1997-now) at **GM-15**. He was a visiting member of **Institute for Advanced Studies** at Princeton in 1977-78, **Lamson endowed Chair Professor** of Univ. of Louisiana at Lafayette in 1996-1998 and built there the **first NASA satellite earth station**. He established the **Digital Media RF Lab**, Dept. of ECE, **George Washington University**, Washington DC, and became the **Director and Research Professor**, while he remains NSWCDD but working at the *Office of Naval Research* defining basic Discover/Innovation programs in Sensors, Surveillance, and Communication..