



John Buck

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Research Interests

My research interests span an interdisciplinary mix of signal processing, underwater acoustics, information theory and bioacoustics. My work attempts to characterize the amount of information carried by underwater sounds, and how this information can be extracted and exploited for remote sensing and communications.

Current Research

There are currently two major funded research efforts taking place in the Acoustic Signal Processing Lab:

1. Passive Sonar Performance Limits from Information Theory, ONR Grant N00014-05-10025.
2. Biosonar Target Classification in Target/Clutter Scenes, subcontract from Brown University on ONR Grant N00014-04-0415.

In addition to these efforts, I spent the 2003-2004 academic year as a Fulbright Senior Scholar in Australia collaborating with Australian researchers on applications of information theory to marine mammal calls.

Recent Publications

Books

Computer Explorations in Signals and Systems, 2nd Edition, by John R. Buck, Michael M. Daniel and Andrew C. Singer, published by Prentice-Hall, October 2001.

Discrete-Time Signal Processing, 2nd Edition, by Alan V. Oppenheim and Ronald W. Schaffer with John R. Buck, published by Prentice-Hall, January 1999.

Refereed Journal Papers

K.E. Wage, J.R. Buck, C.H.G. Wright and T.B. Welch, The signals and systems concept inventory, accepted for publication, *IEEE T. Educ.*

R. Suzuki, J.R. Buck and P.L. Tyack, Information entropy of humpback whale songs, accepted for publication in the *J. Acoust. Soc. Am.*, Vol. 119, No. 3, March 2006, 1849-1866.

K.R. Ball and J.R. Buck, A beamforming video recorder for integrated observations of dolphin behavior and vocalizations (L), *J. Acoust. Soc. Am.*, Vol. 117, No. 3, March 2005, pp. 1005-1008.

J.R. Buck and K.E. Wage, Active and collaborative learning in signal processing courses, invited column for *IEEE Signal Proc. Mag.*, March 2005.

R. Suzuki, J.R. Buck, and P.L. Tyack, The use of Zipf's law in animal communication analysis, *Anim. Behav.*, Vol. 69 (1), January 2005, pp. F9-F17.

J.L. Miksis, P.L. Tyack, and J.R. Buck, Captive dolphins, *Tursiops truncatus*, develop signature whistles that match acoustic features of human-made model sounds, *J. Acoust. Soc. Am.*, Vol. 112, No. 2, August 2002, pp. 728-739.