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EMPLOYER: Space and Naval Warfare Systems Center (SPAWAR Systems Center, SSC)
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Dates: 1986 - present

EDUCATION:

<u>Degree</u>	<u>Major(s)</u>	<u>Institution</u>	<u>Year Awarded</u>
PhD	Mathematics	University of California, San Diego	1985
MS	Applied Mathematics	University of California, San Diego	1979
BA	Mathematics and Biology	Point Loma Nazarene University (San Diego)	1977

RESEARCH INTERESTS and PROFESSIONAL EXPERTISE:

Statistics, Probability & Stochastic Processes, Differential Equations, Numerical Methods, Optimization, Signal Processing, Acoustics, Data Fusion, Pattern Analysis & Machine Learning.

PROFESSIONAL EXPERIENCE:

- Data and information fusion for multi-source and multi-target vessel tracking.
- Data and information fusion for maritime security applications.
- Spatial tracking and fusion of electromagnetic time series.
- Data compression of acoustic time series.
- Acoustic transducer mechanical modeling; finite element analysis.
- Software development support; test and evaluation; software performance specifications.
- Develop and evaluate signal processing algorithms for various sonar array types and ocean environments; evaluate statistical clues for classifying active sonar data.
- Research in statistical signal processing; spectral estimation for random processes; source location estimates; nonparametric regression for acoustic fields and elliptic boundary value problems; parameter estimation for nonstationary random processes.
- Mathematical consultation to scientists and engineers in: statistical signal processing and spectral estimation; random processes; acoustic propagation models; acoustic tomography; neural networks; linear statistical models; estimation and hypothesis testing; classification.

PUBLICATIONS:

JC Allen & SL Hobbs; Spectral Estimation of Non-stationary White Noise; *J. Franklin Inst.*, 334B, 1, pp 99-116, 1997.

SL Hobbs & SS Sritharan; Nonlinear Filtering for Semilinear Partial Differential Equations; *Conference on Modern Analysis and Probability*; ed Goldstein et al; Marcel Dekker, 1995.

SL Hobbs; Asymptotic Statistics for Location Estimates of Acoustic Signals; *J. Acoust. Soc. Am.*, 91, 3, 1992.

SL Hobbs; Non-Parametric Estimation and Statistical Properties of an Ocean Acoustic Pressure Field; *NATO Adv. Study Inst., Acoustic Signal Processing for Ocean Exploration*, 1992. (SSC Publication Award)

DF Gingras & SL Hobbs; Asymptotic Statistics for a Generalized Frequency-Wavenumber Estimation; *IEEE Trans. Acoust. Speech Sig. Proc.*, 38, 5, 1990.

REPORTS & CONFERENCE PAPERS:

Hobbs co-author; National MDA Study Inter-Agency Investment Strategy Document; Sponsored by the National Maritime Domain Awareness (MDA) Requirements and Capabilities Working Group; Prepared for the Joint Staff (F-5) Strategic Plans and Policy Directorate, MDA Policy and United States Coast Guard Headquarters MDA Policies and Plans (G-5) Washington D.C.; 25 Jan 2007.

Hobbs co-author; National MDA Study Inter-Agency Capabilities Document; Sponsored by the National Maritime Domain Awareness (MDA) Requirements and Capabilities Working Group; Prepared for the Joint Staff (F-5) Strategic Plans and Policy Directorate, MDA Policy and United States Coast Guard Headquarters MDA Policies and Plans (G-5) Washington D.C.; 10 Jan 2007.

Hobbs co-author; National MDA Study Inter-Agency Needs Analysis; Sponsored by the National Maritime Domain Awareness (MDA) Requirements and Capabilities Working Group; Prepared for the Joint Staff (F-5) Strategic Plans and Policy Directorate, MDA Policy and United States Coast Guard Headquarters MDA Plans and Policy Offices (G-XMP) Washington D.C.; 21 Dec 2006.

Hobbs co-author; National MDA Study Inter-Agency Requirements Analysis; Sponsored by the National Maritime Domain Awareness (MDA) Requirements and Capabilities Working Group; Prepared for the Joint Staff (F-5) Strategic Plans and Policy Directorate, MDA Policy and United States Coast Guard Headquarters MDA Plans and Policy Offices (G-XMP) Washington D.C.; 30 Nov 2006.

C Barton & S Hobbs & J Kaina; MDA Data Fusion and Analysis Findings (Classified Report); Sponsored by Dept Homeland Security Science and Technology and US Coast Guard MDA Fusion and Analysis Sub-Working Group, MDA Implementation Team; 1 Feb 2007.

C Barton & S Hobbs & J Kaina; MDA Data Fusion and Analysis Assessment Inter-Agency Report - Secret Annex (Classified Report); Sponsored by Dept Homeland Security Science and Technology and US Coast Guard MDA Fusion and Analysis Sub-Working Group, MDA Implementation Team; 1 Nov 2006.

C Barton & S Hobbs & J Kaina & O Kessler & B Lapin & E Tollefson & F White; Maritime Domain Awareness (MDA) Data Fusion Assessment; June 2006.

GW Benthien & SL Hobbs; Handbook of Acoustic Projector Technology, rev 2; *SSC-SD TD 2980*, 2004.

GW Benthien & SL Hobbs; Modeling Acoustic Transducers and Arrays; *SSC-SD TD 3181*, 2004.

GW Benthien & SL Hobbs; Calculation of Acoustic Loading on Transducers in the Time Domain; *Oceans2003 Conference*, 2003.

GW Benthien & D Barach & SL Hobbs; CHIEF2000 Users Manual; *SSC-SD TD 3104*, 2000.

SL Hobbs & D Gillette; Terfenol-D Dogbone Projector Modeling Report; *SSC-SD TR 1775*, 1999.

T Roy & J Bekkedahl & M Hogue & M Mayekawa & S Hobbs & J Herman & M Howard; Signal Processing and Data Fusion for Deployable Autonomous Distributed Systems; *SSC-SD TR 1796*, 1999 (SSC Publication Award).

DF Gingras & SL Hobbs; Asymptotic Statistics for Frequency-Wavenumber Estimation; *IEEE Conference on Acoustics, Speech, and Signal Processing*, 1988.

PhD Thesis: Statistical Properties of a Nonparametric Regression Function on S^2 ; 1985.

MANUSCRIPTS IN PREPARATION:

Classical Applied Analysis, class notes for graduate course covering Hilbert and Banach spaces, ordinary differential equations, integral equations, calculus of variations, approximation and optimization in Hilbert space, distributions and Fourier transform, and second order elliptic boundary value problems and systems.

Non-Parametric Regression Estimates for Elliptic Boundary Value Problems.

Filtering Theory for Stochastic Semilinear Partial Differential Equations, with Dr. S.S. Sritharan.

On Solutions of the Kirchhoff Integral Equation for Acoustic Radiation, with Dr. G.W. Benthien.

TEACHING EXPERIENCE:

- Applied Probability, SDSU, 2006.
- Biomathematics and Bioinformatics, PLNU, 2000 & 2002.
- Mathematical Modeling, PLNU, 1993.
- Mathematical Statistics, PLNU, 1988 & 1990 & 1992.
- Linear Algebra, PLNU, 1989.
- Abstract Algebra, PLNU, 1989.
- Differential Equations, PLNU, 1983 & 1994.
- Finite/Business Mathematics, PLNU, 1982 & 1983.
- Intro Statistics, PLNU, 1982 & 1983 & 1997.
- Intro Statistics, UCSD, 1985.
- Teaching Assistant 5 years at UCSD in calculus, ordinary and partial differential equations, linear algebra, calculus of variations, applied analysis.

CONSULTING EXPERIENCE:

- PMS data for Hmong Women, statistical analysis for master's thesis in anthropology.
- Instrument data, step-wise regression analysis for research in psychology (Dr. K. Holly).
- Education data, statistical analysis for Ed.D. thesis.
- Titanium vs. steel bolt data, hypothesis test for Binomial p parameter for agent of the NIS.
- E2-C aircraft wiring risk analysis for in-flight occurrence of fires in cockpit.
- Failure rate of LTS & SCP transducers (J. DeJaco).
- Grooming data for California Bighorn Sheep, statistical analysis for research (Dr. M. Mooring).

PROGRAMMING EXPERIENCE:

- CHIEF2000 (Combined Helmholtz Integral Equation Formulation) acoustic radiation program; with Dr. G.W. Benthien, D. Barach, D. Gillette.
- AXICHIEF program for acoustic radiation from axisymmetric bodies; with Dr. G.W. Benthien.
- Time Domain CHIEF program for acoustic radiation in the time domain; with Dr G.W. Benthien.
- MS-CAD Bayesian Engine for computation of spatial Bayesian statistics.

PROFESSIONAL MEMBERSHIPS:

- American Mathematical Society (1987 – present)
- Mathematical Association of America (1987 – 1992)
- Institute for Mathematical Statistics (1987 – 1994, 2007-present)
- Society for Industrial and Applied Mathematics (1992 – present)
- Association for Women in Mathematics (1988 – present)