AMBIKA BHATTA
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Objective:
An opportunity in a research position; a recent PhD. Electrical and Computer Engineering graduate with expertise in acoustics and electromagnetic wave propagation and scattering; experience in mentoring undergraduates, freshmen and high school seniors.

Profile:
Background knowledge in electrical machines, switch gear protection and power systems. Knowledge in solids mechanics, wireless communications, coding information theory and computational data modeling.

Educational Background
PhD. Electrical and Computer Engineering
University of Massachusetts at Lowell, (2016)
Dissertation: *Image Based Theory of Scattering from Planar Surfaces with Application to Room Impulse Response*

M.S. Electrical and Computer Engineering
University of Massachusetts at Lowell, MA (2009-2011)
Thesis: *An Analysis of Scattering from a Re-entrant Wedge*
Worcester Polytechnic Institute, MA (2007-2008)

B.S. Electrical Engineering
Lukhdhirji Engineering College, Morvi, Gujarat, India (2005)
Specializing in Electromechanical systems and power systems.

Selected Presentations and Publication
1. A. Bhatta, C. Thompson, K. Chandra, "*Scattering of a Spherical Wave by a Rigid Wedge*", J. Acoust. Soc. Am. POMA, (Review) (2016)
2. A. Bhatta, C. Thompson, K. Chandra, "*A New Theoretical Approach for Impulse Response of a rectangular enclosure and its Numerical Extension*", Inst. Elec. Elect. Eng., Region R1 (2016)
3. A. Bhatta, C. Thompson, K. Chandra,"*Image Source Model for Small Room Acoustics*", J. Acoust. Soc. Am. 137, 2357 (2015)
4. *A. Bhatta, C. Thompson, K. Chandra, V. Mehta,"Impulse response of a Medium in a three Layered Media",* J. Acoust. Soc. Am. 133, 3373 (2013)
5. *A. Bhatta, C. Thompson, K. Chandra, V. Mehta,"Impulse response of a Medium in a three Layered Media",* J. Acoust. Soc. Am. POMA 19, 045041 (2013)
6. *A. Bhatta, T. Pflanz, C. Thompson, K. Chandra,"Analysis and Extension of Scattering from rigid infinite wedge",* J. Acoust. Soc. Am. 130, 2436 (2011)
7. *A. Bhatta, M. Raspopvic, M. Denis, C. Thompson,"Exact image solution approach for multiple reflections",* J. Acoust. Soc. Am. 126, 2160 (2009)
8. *M. Sunny, J. Au, A. Bhatta, K. Chandra, C. Thompson, "Data Communications over Acoustic Channels",* 19th National Undergraduate Research Conference At Argonne National Lab, (2008)

Research

Room Acoustics
1. Experimental and numerical investigation of the spatial acoustic impulse response of a classroom by using C based port audio routines for data acquisition.
2. A rectangular room impulse response is derived.
3. The approach utilizes the separability of the plane wave reflection coefficient in the domain of the three direction cosines of the incident angles. The solution is terms of branch integrals which are characterized by the speed of sound.
4. The solution is validated as a rigorous and an accurate approach than the conventional engineering approximations for moderate frequencies and small rooms.

Scattering and wave propagation
1. An exact solution of acoustic scattering from rigid wedges
2. The solution is modified by the image based representation of the source and the modified solution is exact and computationally faster than the modal solution.
3. A numerical solution of a point source response in 2D cavity is also obtained based on the boundary integral method.
4. Analysis of multipole expansion method with application to scattering from wedges.

Waveguides
1. The exact expression of the reflection coefficient of the wave-guide for a point source incidence is obtained.
2. The model gives an accurate and exact solution of the response for channels for height comparable to the wavelength.
3. The approach applicable for stratified medium, and irregular surfaces.

Teaching

Graduate Motorola Fellow (Fall 08-Spring 2009)
1. Experiments of applied physical acoustics.
2. Computational Programming workshops.
3. Tutorials on wave propagation.

Teaching Assistant (Fall 09-2014) Undergraduate laboratory and recitation
1. Signals and Systems
2. Introduction to Programming
3. Introduction to Probability and Random Processes
4. Linear Feedback.

Adjunct Faculty Electrical and Computer Engineering Department, UMass, Lowell (spring 2016-*) Instructor for *Introduction to Probability and Random Processes*

10th Grade teacher in Lawrence high, MA(2016-*) *Physics, math focus for seniors and juniors*

Recognition and Participation
1. Graduate Research Grant Award, UMass Lowell (2014)
2. Professor Charlie Steel Memorial Award (2009)

3. Motorola Innovation fellowship (2009)
4. High Frequency Structure Simulator (HFSS) and Maxwell 3-D training Ansoft Corporation, Burlington, MA (2007)
5. Electrical Workshop *Krishak Bharti Cooperation* Power Plant, Switch-gear Protection system, India (2005)
6. National Olympiad Examination of Mathematics, India (1998)

Skills and Courses

1. Fortran, C, C++, Python, JAVA, Message Passing Interface(MPI), CUDA based parallel programming using graphic processing units(GPU) and OpenMPI, Knowledge of advanced UNIX system, Labview, Matlab.
2. Theoretical Acoustics, Computational Electromagnetic, Electromagnetic Field and Waves in Complex Media, Solid Mechanics, Vibrations, Coding and information Theory, Queuing Theory, Computer Aided Engineering, and Computational Data Modeling.

Affiliation

1. Acoustical Society of America
2. American Physical Society
3. Institute of Electrical and Electronics Engineer
4. Sigma Xi scientific research society