

# CURRICULUM VITAE

## Loukas F. Kallivokas, PhD, PE

Associate Professor and  
Carrol Allen Fellow in Civil Engineering

---

Department of Civil, Architectural and Environmental Engineering, The University of Texas at Austin  
*voice:* 512-232-5769, *fax:* 512-471-7259, *e-mail:* loukas@mail.utexas.edu, *url:* [www.ce.utexas.edu/prof/kallivokas](http://www.ce.utexas.edu/prof/kallivokas)

---

EDUCATION	PhD in Computational Mechanics	Carnegie Mellon University	1995
	MSc in Civil Engineering	Carnegie Mellon University	1990
	Diploma in Civil Engineering	National Technical University of Athens	1985
ACADEMIC POSITIONS	Associate Professor	Department of Civil, Architectural and Environmental Engineering The University of Texas at Austin	09/05 - present
	Assistant Professor	Department of Civil Engineering The University of Texas at Austin	09/99 - 08/05
	Visiting Scientist	School of Computer Science Carnegie Mellon University	10/98 - 07/99
	Visiting Assistant Professor	Department of Civil Engineering Carnegie Mellon University	08/95 - 08/97
	Postdoctoral Fellow	Center for Orthopaedic Research Shadyside Hospital, Pittsburgh, and The Center for Medical Robotics & Computer Assisted Surgery (MRCAS), The Robotics Institute, Carnegie Mellon University	10/94 - 08/95
	Research Assistant	Department of Civil Engineering Carnegie Mellon University	01/88 - 09/94
	Research Assistant	Laboratory of Structural Analysis and Aseismic Research Department of Civil Engineering National Technical University of Athens	01/86 - 10/87
OTHER PROFESSIONAL POSITIONS	Engineering Consultant	O'Donnell Consulting Engineers, Inc.	03/98 - 07/99
	Engineering Consultant	Design Analysis Systems, Inc.	03/98 - 07/99
	Software Developer	Ansys, Inc.	08/93 - 02/94
	Special Projects Scientist	Computer Center Division Hellenic Navy Hydrographic Service (compulsory military service)	10/85 - 11/87

HONORS AND  
AWARDS

- 2006 Award for Top Research Innovations and Findings for 2005, Texas Department of Transportation (TxDOT) for research conducted under TxDOT Project 4563, "Prediction Model for Concrete Behavior"
- 2006 Dean's Fellowship, The University of Texas at Austin, Spring semester 2006
- 2003 NSF CAREER Award, National Science Foundation, December 2003
- 2002 Departmental Teaching Award, in recognition of excellence in engineering teaching, Department of Civil Engineering, The University of Texas at Austin, March 2002
- 2000 SPEC 2000 Award, Standard Performance Evaluation Corporation (SPEC) competitive award for benchmark codes for exercising computer hardware (sequential version `equake.183` in the CPU2000 suite, parallel versions `equake.320_m` and `equake.321_1` in the OMP2001 suite) - co-authored with D.R. O'Hallaron (Carnegie Mellon University) ([www.spec.org](http://www.spec.org))
- 1998 The Allen Newell Gold Medal for Research Excellence, School of Computer Science, Carnegie Mellon University, April 1998
- 1997 Finalist, 1997 Gordon Bell Prize, with D.R. O'Hallaron, J.R. Shewchuk, J. Bielak, O. Ghattas, H. Bao, and J. Xu, as reported in IEEE Computer, pp 86-92, January 1998
- 1995 NSF-CISE Postdoctoral Research Associates in Computational Science and Engineering Fellowship, National Science Foundation
- 1993 Finalist, Best Paper in Finite Element Analysis, 5<sup>th</sup> Robert J. Melosh Medal Competition, Duke University, Raleigh-Durham, NC
- 1989 Swanson Analysis Systems, Inc. (SASI) Fellowship (SASI is now known as Ansys, Inc.), 1989-1991
- 1984 State Scholarship Institution Scholarship, for outstanding performance in the Department of Civil Engineering, National Technical University of Athens, Athens, Greece
- 1983 State Scholarship Institution Scholarship, for outstanding performance in the Department of Civil Engineering, National Technical University of Athens, Athens, Greece

STUDENT HONORS  
AND AWARDS

- 2011 Sezgin Kucukcoban, Finalist, 23<sup>rd</sup> Robert J. Melosh Medal Competition for the Best Student Paper on Finite Element Analysis, "Subsurface imaging using complete waveforms in PML-Truncated elastic media," Duke University, April 2011
- 2010 Sezgin Kucukcoban, Awardee, Student Competition for Best Paper in Computational Mechanics, "A hybrid formulation for transient wave simulations in unsplit-field PML-truncated heterogeneous media," 2010 Engineering Mechanics Institute Conference (ASCE), August 2010
- 2010 Chanseok Jeong, Finalist, Student Competition for Best Paper in Computational Mechanics, "An inverse source problem for focusing wave energy to subsurface inclusions embedded within heterogeneous media," 2010 Engineering Mechanics Institute Conference (ASCE), August 2010

MEMBERSHIP IN  
PROFESSIONAL  
SOCIETIES

- American Academy of Mechanics (AAM)
- US Association for Computational Mechanics (USACM)
- Society for Industrial and Applied Mathematics (SIAM)
- American Society of Civil Engineers (ASCE)
- American Society of Mechanical Engineers (ASME)
- American Geophysical Union (AGU)
- Multidisciplinary International Society on Inverse Problems in Science and Engineering (IPSES)

OTHER  
AFFILIATIONS

Core Faculty, Institute for Computational Engineering and Sciences (ICES), The University of Texas at Austin

37. S. Kucukcoban and L.F. Kallivokas, "A symmetric hybrid formulation for transient wave simulations in PML-truncated heterogeneous media," *Wave Motion* (in revision), 2011
36. D. Assimaki, L.F. Kallivokas, J.W. Kang, W. Li, S. Kucukcoban, "Time-domain forward and inverse modeling of lossy soils with frequency-independent Q for near-surface applications," *Soil Dynamics and Earthquake Engineering* (in revision), 2011
35. L.F. Kallivokas, S-W. Na, O. Ghattas, B. Jaramaz, "Assessment of a fictitious domain method for patient-specific biomechanical modeling of press-fit orthopaedic implantation," *Computer Methods in Biomechanics and Biomedical Engineering* (in press), 2011, DOI: 10.1080/10255842.2010.545822
34. C. Jeong, C. Huh, L.F. Kallivokas, "On the feasibility of inducing oil mobilization in existing reservoirs via wellbore harmonic fluid action," *Journal of Petroleum Science and Engineering*, **76**, 116–123, 2011
33. J.W. Kang and L.F. Kallivokas, "The inverse medium problem in PML-truncated domains using scalar probing waves," *Computer Methods in Applied Mechanics and Engineering*, **200**(1-4), 265–283, 2011
32. S. Kucukcoban and L.F. Kallivokas, "Mixed perfectly-matched-layers for direct transient analysis in 2D heterogeneous media," *Computer Methods in Applied Mechanics and Engineering*, **200**(1-4), 57–76, 2011
31. P.M. Karve, S-W. Na, J.W. Kang, L.F. Kallivokas, "The inverse medium problem for Timoshenko beams and frames: damage detection and profile reconstruction in the time-domain," *Computational Mechanics*, **47**, 117–136, 2011
30. H. Yi, J. Bielak, L.F. Kallivokas, "A mixed symmetric BEM for multi-domain, multi-material, and crack interface problems in elastostatics," *Recent Developments in Boundary Elements*, E.J. Sapountzakis, ed, WIT Press, 349-363, 2010
29. C. Jeong, C. Huh, L.F. Kallivokas, L.W. Lake, "Optimization of sources for focusing wave energy in targeted formations," *Journal of Geophysics and Engineering*, **7**, 242-256, 2010
28. S. Kucukcoban and L.F. Kallivokas, "A mixed perfectly-matched-layer for transient wave simulations in axisymmetric elastic media," *Computer Modeling in Engineering & Sciences*, **64**(2), 109–146, 2010
27. J.W. Kang and L.F. Kallivokas, "The inverse medium problem in 1D PML-truncated heterogeneous semi-infinite domains," *Inverse Problems in Science and Engineering*, **18**(6), 759-786, 2010
26. J.W. Kang and L.F. Kallivokas, "Mixed unsplit-field perfectly-matched-layers for transient wave propagation in heterogeneous domains," *Computational Geosciences*, **14**, 623-648, 2010
25. C. Jeong, S-W. Na, L.F. Kallivokas, "Near-surface localization and shape identification of a scatterer embedded in a halfplane using scalar waves," *Journal of Computational Acoustics*, **17** (3), 277–308, 2009
24. S-W. Na and L.F. Kallivokas, "Direct time-domain soil profile reconstruction for one-dimensional semi-infinite domains," *Soil Dynamics and Earthquake Engineering*, **29**, 1016–1026, 2009
23. J.W. Kang and L.F. Kallivokas, "Total wavefield-based inversion in PML-truncated domains," *Journal of Physics: Conference Series*, **135**, 1-8 (DOI: 10.1088/1742-6596/135/1/012055), 2008

22. C. Jeong and L.F. Kallivokas, "Inverse scatterer reconstruction in a halfplane using surficial SH line sources," *Computer Modeling in Engineering & Sciences*, **35**(1), 49–71, 2008
21. S-W. Na and L.F. Kallivokas, "Continuation schemes for shape detection in inverse acoustic scattering problems," *Computer Modeling in Engineering & Sciences*, **35**(1), 73–90, 2008
20. S-W. Na and L.F. Kallivokas, "On the inverse problem of soil profile reconstruction - A comparison of time-domain approaches," *Computational Mechanics*, **42**(6), 921–942, 2008
19. S-W. Na and L.F. Kallivokas, "PDE-constrained amplitude-based shape detection in inverse acoustic scattering," *Computational Mechanics*, **41**(4), 579–594, 2008
18. L.F. Kallivokas, T. Juneja, J. Bielak, "A symmetric Galerkin BEM variational framework for multi-domain interface problems," *Computer Methods in Applied Mechanics and Engineering*, **194**(34-35), 3607–3636, 2005
17. V. Akcelik, J. Bielak, G. Biros, I. Epanomeritakis, O. Ghattas, L.F. Kallivokas, E. J. Kim, "An online framework for inversion-based 3D site characterization," *Lecture Notes in Computer Science*, Computational Science, **3038/2004**, 717–724, 2004
16. L.F. Kallivokas and S. Lee, "Local absorbing boundaries of elliptical shape for scalar waves," *Computer Methods in Applied Mechanics and Engineering*, **193**(45-47), 4979–5015, 2004
15. L.F. Kallivokas and S. Lee, "Ellipsoidally-shaped local absorbing boundaries for three-dimensional scalar wave propagation," *Computational Mechanics*, **35**(1), 11–23, 2004
14. S. Lee and L.F. Kallivokas, "Local absorbing boundaries of elliptical shape for scalar wave propagation in a half-plane," *Finite Elements in Analysis and Design*, **40**(15), 2063–2084, 2004
13. N.G. Pnevmatikos, L.F. Kallivokas, C.J. Gantes, "Feed-forward control of active variable stiffness systems for mitigating seismic hazard in structures," *Engineering Structures*, **26**(4), 471–483, 2004
12. A.M. Al-Khaleefi, A. Ali, C. Rajakumar, L.F. Kallivokas, "Acoustic analysis with absorbing finite elements and far-field computations using free-space Green's functions," *Engineering Analysis with Boundary Elements*, **26**, 929–937, 2002
11. H. Bao, J. Bielak, O. Ghattas, L.F. Kallivokas, D.R. O'Hallaron, J.R. Shewchuk, J. Xu, "Large-scale simulation of elastic wave propagation in heterogeneous media on parallel computers," *Computer Methods in Applied Mechanics and Engineering*, **152**(1-2), 85–102, 1998
10. L.F. Kallivokas, J. Bielak and R.C. MacCamy, "A simple impedance-infinite element for the finite element solution of the three-dimensional wave equation in unbounded domains," *Computer Methods in Applied Mechanics and Engineering*, **147**, 235–262, 1997
9. L.F. Kallivokas, A. Tsikas and J. Bielak, "On transient three-dimensional absorbing boundary conditions for the modeling of acoustic scattering from near-surface obstacles," *Journal of Computational Acoustics*, **5**(1), 117–136, 1997
8. L.F. Kallivokas and J. Bielak, "A time-domain impedance element for FEA of axisymmetric exterior structural acoustics," *ASME Journal of Vibration and Acoustics*, **117**, 145–151, 1995

7. L.F. Kallivokas and J. Bielak, "An element for the analysis of transient exterior fluid-structure interaction problems using the FEM," *Finite Elements in Analysis and Design*, **15**, 69–83, 1993
6. X. Zeng, L.F. Kallivokas and J. Bielak, "A symmetric variational finite element-boundary integral equation coupling method," *Computers & Structures*, **46**(6), 995–1000, 1993
5. L.F. Kallivokas and J. Bielak, "Time-domain analysis of transient structural acoustics problems based on the finite element method and a novel absorbing boundary element," *Journal of the Acoustical Society of America*, **94**(6), 3480–3492, 1993
4. X. Zeng, L.F. Kallivokas and J. Bielak, "Stable localized symmetric integral equation method for acoustic scattering problems," *Journal of the Acoustical Society of America*, **91**(5), 2510–2518, 1992
3. L.F. Kallivokas, J. Bielak and R.C. MacCamy, "Symmetric local absorbing boundaries in time and space," *ASCE Journal of Engineering Mechanics*, **117**(9), 2027–2048, 1991
2. J.T. Katsikadelis and L.F. Kallivokas, "Plates on biparametric elastic foundation by BDIE method," *ASCE Journal of Engineering Mechanics*, **114**(5), 847–875, 1988
1. J.T. Katsikadelis and L.F. Kallivokas, "Clamped plates on Pasternak-type elastic foundation," *ASME Journal of Applied Mechanics*, **53**(4), 909–917, 1986

CONFERENCE  
PROCEEDINGS

86. D. Assimaki, L.F. Kallivokas, K. Mohammadi, "Three-dimensional topographic amplification of seismic ground motion on an idealized convex feature," *2011 Seismological Society of America Annual Meeting*, Memphis, TN, April 2011
85. L.F. Kallivokas, "On the inverse medium problem in semi-infinite domains," *7<sup>th</sup> German-Greek-Polish Symposium on Recent Advances in Mechanics*, Poznan, Poland, September 2010 (by invitation only)
84. C. Jeong, S. Kucukcoban, L.F. Kallivokas, C. Huh, "An inverse source problem for focusing wave energy to subsurface inclusions embedded within heterogeneous media," *Proceedings ASCE Engineering Mechanics Institute 2010*, Los Angeles, CA, August 2010
83. J.W. Kang and L.F. Kallivokas, "A full-waveform based material profile inversion in heterogeneous PML-truncated domains with applications to lossless and lossy media," *Proceedings ASCE Engineering Mechanics Institute 2010*, Los Angeles, CA, August 2010
82. S. Kucukcoban and L.F. Kallivokas, "A hybrid formulation for transient wave simulations in unsplit-field PML-truncated heterogeneous media," *Proceedings ASCE Engineering Mechanics Institute 2010*, Los Angeles, CA, August 2010
81. C. Jeong, L.F. Kallivokas, C. Huh, "Identification of the optimal wave source signal for elastic wave-based enhanced oil recovery," *US-Korea Conference on Science, Technology, and Entrepreneurship (UKC)*, Seattle, WA, August 2010
80. J.W. Kang and L.F. Kallivokas, "Material profile reconstruction in PML-truncated semi-infinite domains," *US-Korea Conference on Science, Technology, and Entrepreneurship (UKC)*, Seattle, WA, August 2010
79. J.W. Kang, S. Kucukcoban and L.F. Kallivokas, "The inverse medium problem in PML-truncated domains," *IV European Conference on Computational Mechanics*, Paris, France, May 2010 (Mini-symposium keynote lecture)

78. L.F. Kallivokas, "The inverse medium problem in PML-truncated domains," *IPRPI Symposium on Inverse Problems and System Identification of Geosystems*, Inverse Problems Center, Rensselaer Polytechnic Institute, Troy, NY, March, 2010 (by invitation only)
77. C. Jeong, C. Huh, and L.F. Kallivokas, "An inverse source problem arising in seismic enhanced oil recovery," *The 10th US National Congress on Computational Mechanics*, Columbus, OH, July 2009
76. J.W. Kang, L.F. Kallivokas, K.-S. Park, K.H. Stokoe, "On the inverse medium problem in a two-dimensional semi-infinite domain: theory, numerical simulations, and physical experiments," *The 10th US National Congress on Computational Mechanics*, Columbus, OH, July 2009
75. S. Kucukcoban and L.F. Kallivokas, "Perfectly-matched-layers for direct transient analysis," The 2009 Joint ASCE-ASME-SES Conference on Mechanics and Materials, Blacksburg, VA, June 2009
74. C. Jeong, C. Huh, and L.F. Kallivokas, "Wave energy focusing for enhanced oil recovery," The 2009 Joint ASCE-ASME-SES Conference on Mechanics and Materials, Blacksburg, VA, June 2009
73. J.W. Kang, L.F. Kallivokas, K.-S. Park, K.H. Stokoe, "On the reconstruction of the soil's shear wave velocity profile," *The 2009 Joint ASCE-ASME-SES Conference on Mechanics and Materials*, Blacksburg, VA, June 2009
72. L.F. Kallivokas, "Site characterization using total wavefields," *Proceedings of the 2009 NSF Engineering Research and Innovation Conference*, Honolulu, HI, June 2009
71. M. Argaez, D. Assimaki, J. Bielak, O. Ghattas, L.F. Kallivokas, A. Kalos, J.W. Kang, S. Kucukcoban, S.-W. Na, A. Sosa, J. Steidl, K.H. Stokoe II, R. Taborda, L. Velazquez, "High-Fidelity Site Characterization by Experimentation, Field Observation, and Inversion-Based Modeling", *2009 NSF CMMI Engineering Research and Innovation Conference (NSF Grantees - Poster presentation)*, Honolulu, HI, June 2009
70. J.W. Kang and L.F. Kallivokas, "Total wavefield-based inversion in PML-truncated domains," *6th International Conference on Inverse Problems in Engineering (ICIPE 08)*, Dourdan, France, June 2008
69. C. Jeong, C. Huh, L.F. Kallivokas, "An inverse source identification problem in layered media," *EM08, The Inaugural International Conference of the Engineering Mechanics Institute*, Minneapolis, MN, May 2008
68. S. Kucukcoban and L.F. Kallivokas, "Perfectly matched layers in axisymmetric elastic media for direct transient analysis," *EM08, The Inaugural International Conference of the Engineering Mechanics Institute*, Minneapolis, MN, May 2008
67. J.W. Kang and L.F. Kallivokas, "PML-endowed material profile reconstruction in heterogeneous semi- infinite domains," *EM08, The Inaugural International Conference of the Engineering Mechanics Institute*, Minneapolis, MN, May 2008
66. J.W. Kang and L.F. Kallivokas, "Total wavefield-based material profile reconstruction in PML-truncated semi-infinite domains," *2008 NSF CMMI Engineering Research and Innovation Conference (NSF Grantees - Poster presentation)*, Knoxville, TN, January 2008
65. M. Argaez, D. Assimaki, J. Bielak, O. Ghattas, L.F. Kallivokas, A. Kalos, J.W. Kang, S. Kucukcoban, C. Jeong, S.-W. Na, L. Ramirez-Guzman, J. Steidl, K. H. Stokoe II, R. Taborda, and L. Velazquez, "High fidelity site characterization,

- field observation, and inversion-based modeling,” *2008 NSF CMMI Engineering Research and Innovation Conference (NSF Grantees - Poster presentation)*, Knoxville, TN, January 2008
64. C. Jeong, S.-W. Na and L.F. Kallivokas, “Localization and shape detection of objects buried in a halfplane,” *Proceedings COMPDYN 2007, ECCOMAS Thematic Conference in Structural Dynamics and Earthquake Engineering*, Crete, Greece, June 2007 (14 pages)
  63. C. Jeong, S.-W. Na and L.F. Kallivokas, “On inverse scalar scattering problems in a halfplane,” *Proceedings 8th HSTAM Congress on Mechanics*, Patras, Greece, July 2007 (8 pages)
  62. J.W. Kang and L.F. Kallivokas, “Forward and inverse total wavefield modeling of heterogeneous PML-truncated semi-infinite domains,” *Proceedings 8th HSTAM Congress on Mechanics*, Patras, Greece, July 2007 (8 pages)
  61. J.W. Kang and L.F. Kallivokas, “Mixed unsplit-field perfectly-matched-layers for transient wave propagation in heterogeneous domains,” *Proceedings COMPDYN 2007, ECCOMAS Thematic Conference in Structural Dynamics and Earthquake Engineering*, Crete, Greece, June 2007 (13 pages)
  60. S. Kucukcoban, A. Pebley, S.L. Wood, L.F. Kallivokas, “Post-mortem motion analysis of the Fred Hartman Bridge large-amplitude stay-cable vibrations,” *Proceedings COMPDYN 2007, ECCOMAS Thematic Conference in Structural Dynamics and Earthquake Engineering*, Crete, Greece, June 2007 (16 pages)
  59. J.W. Kang and L.F. Kallivokas, “Subsurface imaging of PML-truncated semi-infinite domains,” *Proceedings COMPDYN 2007, ECCOMAS Thematic Conference in Structural Dynamics and Earthquake Engineering*, Crete, Greece, June 2007 (13 pages)
  58. C. Jeong, S.-W. Na and L.F. Kallivokas, “Full-waveform-based shape detection and localization of a scatterer embedded in a halfplane,” *Proceedings 9th US National Congress on Computational Mechanics*, San Francisco, California, July 2007
  57. J.W. Kang and L.F. Kallivokas, “Material profile inversion in semi-infinite domains truncated by unsplit-field perfectly-matched-layers,” *Proceedings 18th Engineering Mechanics Division Conference EMD2007*, Blacksburg, VA, June 2007 (8 pages)
  56. S. Kucukcoban, A. Pebley, S.L. Wood, L.F. Kallivokas, “Image analysis and computational reconstruction of the Fred Hartman Bridge large-amplitude stay-cable motion,” *Proceedings 18th Engineering Mechanics Division Conference EMD2007*, Blacksburg, VA, June 2007 (7 pages)
  55. J.W. Kang and L.F. Kallivokas, “A mixed unsplit-field PML-based scheme for total wavefield inversion in the time-domain,” *SIAM Conference on Mathematical and Computational Issues in the Geosciences*, Santa Fe, NM, March 2007
  54. C. Garza, D.L. Wheat, L.F. Kallivokas, “Forward and inverse modeling of piezoelectric effects in wood,” *9th World Conference on Timber Engineering*, Portland, OR, August 2006
  53. S.-W. Na and L.F. Kallivokas, “Wavefield-based two-dimensional material profile reconstruction using a time-dependent regularization scheme,” *7th World Conference on Computational Mechanics*, Los Angeles, CA, July 2006
  52. J.W. Kang and L.F. Kallivokas, “Inverse material profile reconstruction in PML-truncated domains,” *7th World Conference on Computational Mechanics*, Los Angeles, CA, July 2006

51. C. Garza, D.L. Wheat, L.F. Kallivokas, "Feasibility of using the piezoelectric properties of wood for structural health monitoring," *2006 Structures Congress*, Saint Louis, MO, May 2006
50. S-W. Na and L.F. Kallivokas, "Wavefield-based soil profile reconstruction in the time domain," *Eighth US National Congress on Computational Mechanics*, Austin, TX, July 2005
49. S-W. Na and L.F. Kallivokas, "Inversion of velocity and attenuation parameters in linear soils using a time-dependent regularization scheme," *SIAM Conference of Mathematical & Computational Issues in the Geosciences*, Avignon, France, June 2005
48. S-W. Na and L.F. Kallivokas, "A coupled space-time approach to the inverse profile reconstruction of layered soils for geotechnical and geophysical applications," *ECCOMAS Thematic Conference, Coupled Problems 2005, Computational Problems in Science and Engineering*, Santorini Island, Greece, May 2005
47. S.-W. Na and L.F. Kallivokas, "Frequency- and directionality-continuation schemes for scatterer shape detection in acoustics," *XXI International Conference on Theoretical and Applied Mechanics (ICTAM04)*, Warsaw, Poland, August 2004 (invited paper)
46. G. Biros, S.-W. Na, L.F. Kallivokas, "Distributed parameter control of a 2D acoustic Helmholtz problem on a halfspace," *XXI International Conference on Theoretical and Applied Mechanics (ICTAM04)*, Warsaw, Poland, August 2004 (invited paper)
45. B. Binici and L.F. Kallivokas, "Crack identification in beams using multiple spectra," *Third European Conference on Structural Control*, Vienna, Austria, July 2004
44. N.G. Pnevmatikos, L.F. Kallivokas, C.J. Gantes, "Control algorithms for mitigating seismic hazard in structures accounting for the incoming earthquakes' frequency content," *International Symposium on Smart Structures Technologies and Earthquake Engineering (SE04)*, Osaka University, Osaka, Japan, July 2004
43. L.F. Kallivokas, J. Bielak, T. Juneja, "An energy-based SGBEM approach for multi-domain problems with corners," *IABEM (International Association for Boundary Element Methods) 2004 Conference*, University of Minnesota - Twin Cities, MN, May 2004
42. S.-W. Na and L.F. Kallivokas, "Shape detection in inverse acoustic scattering problems," *Proceedings of the 16th ASCE Engineering Mechanics Conference*, Seattle, WA, July 2003
41. S. Lee and L.F. Kallivokas, "Numerical experiments with local ellipsoidal absorbing boundaries for scalar waves," *Proceedings of the 16th ASCE Engineering Mechanics Conference*, Seattle, WA, July 2003
40. S. Lee and L.F. Kallivokas, "Absorbing boundaries of elliptical shape for two-dimensional time- and frequency-domain analysis of acoustic problems," *Seventh US National Congress on Computational Mechanics*, Albuquerque, NM, July 2003
39. S.-W. Na, L.F. Kallivokas, B. Jaramaz, "Modeling of a press-fit problem in computational biomechanics using the fictitious domain method," *14th US National Congress on Theoretical and Applied Mechanics, Special Symposium in Advances in Computational Mechanics*, Blacksburg, VA, June 2002

38. T. Juneja, L.F. Kallivokas, J. Bielak, "Symmetric variational boundary element methods for interface problems in acoustics," *14th US National Congress on Theoretical and Applied Mechanics, Special Symposium in Advances in Computational Mechanics*, Blacksburg, VA, June 2002
37. S. Lee and L.F. Kallivokas, "A new class of two-dimensional absorbing boundaries of elliptical shape for the scalar wave equation," in *Proceedings of the 4th GRACM Congress on Computational Mechanics (distributed on CD-ROM)*, Patras, Greece, June 2002
36. L.F. Kallivokas, T. Juneja, J. Bielak, "On a symmetric Galerkin BEM formulation for multi-domain interface problems," in *Proceedings of the 4th GRACM Congress on Computational Mechanics (distributed on CD-ROM)*, Patras, Greece, June 2002
35. M. Aeschlimann, P.A. Dinda, L.F. Kallivokas, J. Lopez, B. Lowekamp, D.R. O'Hallaron, "Preliminary report on the design of a framework for distributed visualization," *Parallel and Distributed Processing Techniques and Applications (PDPTA99)*, 1833–1839, Las Vegas, NV, August 1999
34. P.A. Dinda, B. Lowekamp, L.F. Kallivokas, D.R. O'Hallaron, "The case for prediction-based best-effort real-time systems," *Seventh International Workshop on Parallel and Distributed Real-Time Systems (WPDRTS 1999)*, in Vol 1586 of *Lecture Notes in Computer Science*, 309–318, Springer-Verlag, San Juan, PR, April 1999
33. J. Bielak, H. Bao, O. Ghattas, L.F. Kallivokas, J. Xu, "Finite element modeling on ground motion in large basins," *Workshop on Verification of Three-Dimensional Modeling of Ground Motion in Basins*, Southern California Earthquake Center, Costa Mesa, CA, October 1997
32. G. Biros, L.F. Kallivokas, O. Ghattas, B. Jaramaz, "Direct CT-scan to finite element modeling using a 3D fictitious domain method with an application to biomechanics," *Fourth US National Congress on Computational Mechanics*, p. 404, San Francisco, CA, August 1997
31. L.F. Kallivokas, A. Tsikas, J. Bielak, "An absorbing element for transient half-space problems in structural acoustics," *Fourth US National Congress on Computational Mechanics*, p. 102, San Francisco, CA, August 1997
30. H. Bao, J. Bielak, O. Ghattas, L.F. Kallivokas, D.R. O'Hallaron, J.R. Shewchuk, J. Xu, "Earthquake ground motion modeling of large heterogeneous basins on parallel computers," *Fourth US National Congress on Computational Mechanics*, p. 468, San Francisco, CA, August 1997
29. H. Bao, J. Bielak, O. Ghattas, L.F. Kallivokas, J. Xu, "Large-scale simulation of basin effects on ground motion," *The 29th General Assembly of the International Association of Seismology and Physics of the Earth's Interior*, IASPEI 1997, Thessaloniki, Greece, August 1997
28. L.F. Kallivokas, J. Bielak, R.C. MacCamy, "Absorbing boundary conditions of arbitrary shape for the three-dimensional wave equation," in *IUTAM Symposium on Computational Methods for Unbounded Domains*, pp. 221-228, Kluwer Academic Publishers, Boulder, CO, July 1997 (invited paper)
27. J. Bielak, L.F. Kallivokas, R.C. MacCamy, "Absorbing boundary conditions for acoustic wave propagation problems," in *IUTAM Symposium on Computational Methods for Unbounded Domains*, pp. 43-51, Kluwer Academic Publishers, Boulder, CO, July 1997 (invited paper)

26. H. Bao, J. Bielak, O. Ghattas, L.F. Kallivokas, D.R. O'Hallaron, J.R. Shewchuk, J. Xu, "Modeling seismic wave propagation in large basins on parallel computers," *4th SIAM Conference on Mathematical and Computational Issues in the Geosciences*, Albuquerque, NM, June 1997
25. J. Bielak, H. Bao, O. Ghattas, L.F. Kallivokas, J. Xu, "Characterizing seismic ground motion in large basins," *Western States Seismic Policy Council's Basin and Range Province Seismic Hazard Summit*, Reno, NV, May 1997
24. J. Bielak, H. Bao, O. Ghattas, L.F. Kallivokas, J. Xu, D.R. O'Hallaron, J.R. Shewchuk, "Earthquake ground motion modeling in large heterogeneous basins on parallel computers," *8th SIAM Conference on Parallel Processing for Scientific Computing*, Minneapolis, MN, March 1997
23. J. Bielak, H. Bao, O. Ghattas, L.F. Kallivokas, D.R. O'Hallaron, J. Shewchuk, J. Xu, "Earthquake ground motion modeling on parallel computers," *International Symposium on Parallel Computing in Engineering and Science*, Tokyo, Japan, January 1997
22. J. Bielak, H. Bao, O. Ghattas, L.F. Kallivokas, J. Xu, "Earthquake ground motion modeling in large basins," *Annual Meeting of the Disaster Prevention Research Institute*, Kyoto University, Tokyo, Japan, January 1997
21. J. Bielak, H. Bao, O. Ghattas, L.F. Kallivokas, D.R. O'Hallaron, J. Shewchuk, J. Xu, "Earthquake ground motion modeling in large basins on parallel computers," *Advances in Computational Mechanics*, A Conference in honor of the 60th birthday of Professor J.T. Oden, University of Texas, Austin, TX, January 1997
20. J. Bielak, H. Bao, O. Ghattas, L.F. Kallivokas, J. Xu, D.R. O'Hallaron, J.R. Shewchuk, "Earthquake ground motion modeling on parallel computers," *American Geophysical Union 1996 Fall Meeting*, San Francisco, CA, December 1996
19. H. Bao, J. Bielak, O. Ghattas, D.R. O'Hallaron, L.F. Kallivokas, J.R. Shewchuk, J. Xu, "Earthquake ground motion modeling on parallel computers," in *Proceedings Supercomputing 96* (distributed on CD-ROM), Pittsburgh, PA, November 1996
18. L.F. Kallivokas, B. Jaramaz, O. Ghattas, S.V. Shah, A.M. DiGioia III, "Biomechanics-based pre-operative planning in THR-Application of fictitious domain method," in *Advances in Bioengineering*, BED-Vol. 33, pp. 389-390, Winter Annual Meeting, ASME, Atlanta, GA, November 1996
17. B. Jaramaz, S.M. Kladakis, A.M. DiGioia III, L.F. Kallivokas, and O. Ghattas, "Simulation of implant impingement and dislocation in total hip replacement," *Computer Assisted Radiology 10th International Symposium and Exhibition*, p. 1047, Paris, France, June 1996
16. J. Bielak, K. Aki, O. Ghattas, T. Gross, D.R. O'Hallaron, F. J. Sanchez-Sesma, H. Bao, Y. Hisada, L.F. Kallivokas, J.R. Shewchuk, J.M. Stichnoth, J. Xu, "Earthquake ground motion modeling in large basins," in *Proceedings of the NSF Grand Challenges Workshop*, Washington, DC, March 1996
15. T. Kanade, A.M. DiGioia III, O. Ghattas, B. Jaramaz, M. Blackwell, L.F. Kallivokas, F. Morgan, S. Shah, D.A. Simon, "Simulation, planning, and execution of computer-assisted surgery," in *Proceedings of the NSF Grand Challenges Workshop*, Washington, DC, March 1996
14. S.V. Shah, L.F. Kallivokas, B. Jaramaz, O. Ghattas and A.M. DiGioia III, "The fictitious domain method for patient-specific biomechanical modeling: Promise and prospects," in *Proceedings of the Second International Symposium on Medical Robotics and Computer Assisted Surgery*, 329-333, Baltimore, MD, November 1995

13. L.F. Kallivokas and J. Bielak, "Transient and time-harmonic infinite elements for near-surface computations of three-dimensional structures submerged in a half-space," in *Proceedings of the Symposium on Acoustics of Submerged Structures & Transduction Systems*, DE-Vol. 84-2, Vol. 3, Part B, pp. 129-140, ASME 15th Biennial Conference on Mechanical Vibration and Noise, Boston, MA, September 1995
12. L.F. Kallivokas and J. Bielak, "Transient and time-harmonic infinite elements for the numerical simulation of three-dimensional submerged structures," *Second International Conference on Theoretical and Computational Acoustics*, Honolulu, HI, August 1995
11. A. Ali, C. Rajakumar and L.F. Kallivokas, "Acoustic analysis with absorbing-boundary finite elements and the use of free-space Green's functions for far-field computations," *Third US National Congress on Computational Mechanics*, Dallas, TX, June 1995
10. J. Bielak, L.F. Kallivokas, J. Xu and R. Monopoli, "Finite element absorbing boundary for the wave equation in a half-plane with an application to engineering seismology," in *Proceedings of the Third International Conference on Mathematical and Numerical Aspects of Wave Propagation* (INRIA-SIAM), pp. 489-498, Juan-les-Pins, France, April 1995
9. R.V. O'Toole, D.A. Simon, B. Jaramaz, O. Ghattas, M.K. Blackwell, L.F. Kallivokas, F. Morgan, C. Visnic, A.M. DiGioia III, T. Kanade, "Towards more capable and less invasive robotic surgery in orthopaedics," in *Proceedings of the First International Conference on Computer Vision, Virtual Reality, and Robotics in Medicine*, CVRMed'95, pp. 123-130, Nice, France, April 1995
8. M.K. Blackwell, A.M. DiGioia III, O. Ghattas, B. Jaramaz, B. John, L.F. Kallivokas, T. Kanade, F. Morgan, R.V. O'Toole, D.A. Simon, H. Tabachneck and C. Visnic, "Planning, simulation, and execution of robot-assisted surgery in orthopaedics," in *SPIE's International Technical Working Group Newsletter, Robotics and Machine Perception*, Special Issue on Robotics for biomedical applications, Vol 4 (1), April 1995
7. L.F. Kallivokas and J. Bielak, "Three-dimensional structural acoustic analysis in time and frequency domains," *Symposium on Computational Structural Acoustics at the 31st Society of Engineering Science Conference*, Annual Technical Meeting, Texas A&M University, College Station, TX, October 1994
6. L.F. Kallivokas and J. Bielak, "Transient analysis of the axisymmetric three-dimensional exterior structural acoustics problem based on the FEM and a novel impedance element," *Winter Annual Meeting*, ASME, 93-WA/NCA-14, pp. 1-10, New Orleans, LA, December 1993
5. L.F. Kallivokas and J. Bielak, "Localized method for structural acoustics problems in the time domain and in the frequency domain," *Symposium on Computational Methods for Structural Acoustics*, *Second US National Congress on Computational Mechanics*, Washington, DC, August 1993
4. L.F. Kallivokas and J. Bielak, "Local symmetric nonreflecting boundary for transient scattering and radiation in fluid-shell interaction systems," *First International Conference on Theoretical and Computational Acoustics*, Mystic, CT, July 1993
3. L.F. Kallivokas, "A novel element for the analysis of transient exterior fluid-structure interaction problems using the FEM," *5th Robert J. Melosh Medal Competition for Best Paper in Finite Elements*, Duke University, Durham, NC, April 1993

2. J. Bielak, L.F. Kallivokas and R.C. MacCamy, "Numerical experiments for absorbing boundaries," *SIAM annual meeting*, Chicago, IL, July 1990
1. J. Bielak, L.F. Kallivokas and R.C. MacCamy, "Asymptotic artificial boundary conditions for wavelike equations," *International Workshop on Integral and Field Equation Methods in Fluid-Structure Interactions*, Newark, DE, August 1989

RESEARCH GRANTS	Project Title	Agency	Amount	Award Period
	Topographic amplification of seismic motion: observations and simulations in 3D (with D. Assimaki)	NSF	\$365,324 (\$148,136)	09/2010 - 08/2013
	Non-destructive evaluation of in-service concrete structures affected by alkali-silica reaction (ASR) or delayed ettringite formation (DEF) (with K.J. Folliard, O. Bayrak, J. Zhu, et al)	TxDOT	\$995,000 (\$60,000)	09/2009 - 08/2012
	Selective focusing of elastic wave energy in existing reservoirs for enhanced oil recovery (EOR) (with C. Huh)	KAUST	\$120,105 (\$120,105)	09/2008 - 01/2010
	Development of a device for total pavements acceptance (with K.H. Stokoe, M. Murphy, et al)	TxDOT	\$1,411,570 (\$163,000)	09/2008 - 08/2011
	Alkali-silica reactivity - ASR (with K.J. Folliard et al)	FHWA	\$268,000 (\$50,000)	09/2008 - 08/2012
	Development of predictive model for bridge deck cracking and strength development (with K.J. Folliard et al)	TxDOT	\$498,500 (\$110,000)	09/2008 - 08/2011
	REU - Research experience for undergraduates (supplemental to NEESR-SG)	NSF	\$12,000 (\$12,000)	06/2008 - 08/2008
	NEESR-SG: High-fidelity site characterization by experimentation, field observation, and inversion-based modeling (with K.H. Stokoe, J. Bielak, D. Assimaki, O. Ghattas, et al)	NSF	\$1,480,000 (\$508,365)	10/2007 - 09/2011
	Heat generation in mass concrete (with K.J. Folliard, M. Juenger, A. Schindler)	TxDOT	\$190,000 (\$70,000)	09/2006 - 08/2007
	MRI: Acquisition of a high-performance computing system for online simulation (with O. Ghattas, T.J. Oden, et al)	NSF	\$800,000 (\$0)	08/2006 - 07/2009
	CAREER: Towards near-real time site characterization: Advanced computational methods and NEES-based validation experiments	NSF	\$439,451 (\$439,451)	01/2004 - 12/2008

RESEARCH  
GRANTS

Project Title	Agency	Amount	Award Period
Collaborative research: ITR/NGS: Multiresolution high fidelity earthquake modeling: dynamic rupture, basin response, blind deconvolution seismic inversion, and ultra-scale computing (with J. Bielak, O. Ghattas, S.M. Day)	NSF	\$1,984,727 (\$273,163)	10/2003 - 09/2007
Vessel impact on bridges (with L. Manuel and E. Williamson)	TxDOT	\$271,452 (\$90,484)	09/2003 - 08/2005
Determination of fatigue damage in cable stays (with S. Wood and K. Frank)	TxDOT	\$555,000 (\$167,500)	09/2002 - 08/2005
Feasibility study of vehicle survivability concepts on off-road terrain (with R. Longoria, R. Stearman, J. Beno)	DARPA	\$294,403 (\$38,000)	06/2001 - 05/2002
Towards structural flaw and material identification via inversion of dynamic data	UT-SRA	\$14,000 (\$14,000)	06/2000- 08/2000
The role of input energy in assessing seismic hazard and damage following the Turkey earthquakes (with L. Manuel)	NSF	\$70,422 (\$35,211)	09/2000 - 08/2002
Towards enhanced instruction of numerical methods for civil engineers	Fluor Corporation	\$4,000 (\$4,000)	07/2001 - 09/2001
Software for complementing instruction of finite element courses	Ansys, Inc	\$25,000 (\$25,000)	07/2000 - 06/2001
		<hr/>	
Total (my share)		\$9,798,954 (\$2,328,415)	

STUDENT SUPERVISION	Status	Name	Degree	Thesis title/topic
	Current	Chanseok Jeong	PhD	An inverse source problem for EOR
		Pranav Karve	PhD	Sea floor characterization
		Arash Fathi	PhD	3D inverse medium problems
		Babak Poursartip	PhD	Topography effects
		Seungbum Koo	PhD	Multiphysics-based inversion
		H. Mashayekh	PhD	Tools for the RDD
	Graduated	Tapan Thakur	MS (05/2011)	Wave motion simulation using spectral elements and a hybrid PML formulation
		Sezgin Kucukcoban	PhD (12/2010)	The inverse medium problem in PML-truncated elastic media
		Jun Won Kang	PhD (05/2010)	A mixed unsplit-field PML-based scheme for full waveform inversion in the time-domain using scalar waves
		Claire Carpenter	MS (05/2010)	Data analysis and signal processing for the total pavement acceptance device
		Pranav Karve	MS (12/2009)	The inverse medium problem for Timoshenko beams and frames
		Chanseok Jeong	MS (12/2006)	Shape detection and localization of a scatterer embedded in a halfplane
		Carlos Garza	MS (12/2006)	Finite element modeling of wood as a piezoelectric material
		Seong-Won Na	PhD (05/2006)	On a class of two-dimensional inverse problems: wavefield-based shape detection and localization and material profile reconstruction
		Sanghoon Lee	PhD (05/2004)	Weakly non-local arbitrarily-shaped absorbing boundary conditions for acoustics and elastodynamics - Theory and numerical experiments
		Adam Cryer	MS (08/2005)	Modeling of waterway vessel impact on bridge piers
		Aaron Pebley	MS (08/2005)	Bending stresses in stay-cables during large-amplitude vibrations - A Fred Hartman bridge case study
		Tanjeet Juneja	MS (05/2003)	A symmetric Galerkin boundary element method for multi-domain interface problems
		Surapap Prompattaraporn	MS (05/2002)	An optimization-based algorithm for damage detection in simple structural components

TEACHING	Institution	Course title	Level
	The University of Texas at Austin	Introduction to Computer Methods - CE311K	Undergraduate
		Advanced Structural Analysis - CE363	Undergraduate
		Structural Analysis - CE329	Undergraduate
		The Finite Element Method - CE381R	Graduate
		Dynamic Response of Structures - CE384P	Graduate
		Introduction to Wave Physics - CE381W	Graduate
	Carnegie Mellon University	Introduction to Solid Mechanics I - 24-751	Graduate
CONFERENCE-SYMPOSIA ORGANIZATION	<ul style="list-style-type: none"> <li>- Organizer, Mini-symposium on "Forward and Inverse Problems of Wave Propagation and Scattering in Heterogeneous Media," Engineering Mechanics Institute 2010, Los Angeles, CA, August 10, (with D. Assimaki, Georgia Tech)</li> <li>- Organizer, Mini-symposium on "Advances in the analysis and simulation of waves," The Inaugural International Conference of the Engineering Mechanics Institute (ASCE EM08), Minneapolis, MN, May 2008 (with D. Assimaki, Georgia Tech)</li> <li>- Organizer, Mini-symposium on "Seismic waveform inversion and dynamic site characterization," COMPDYN 2007, ECCOMAS Thematic Conference in Structural Dynamics and Earthquake Engineering, Crete, Greece, June 2007 (with B. Guzina, UMN)</li> <li>- Organizer, Mini-symposium on "Inverse Problems," 8th US National Congress on Computational Mechanics, Austin, July 2005 (with B. Guzina, UMN)</li> <li>- Organizer, two sessions on "Wave propagation," 16th ASCE Engineering Mechanics Conference, Seattle, WA, July 2003 (with M. Guddati, NCSU)</li> <li>- Member, Local Organizing Committee, IABEM 2002 Symposium, International Association for Boundary Element Methods, Austin, TX, May 2002</li> <li>- Member, Local Organizing Committee, 14th ASCE Engineering Mechanics Conference, Austin, TX, May 2000</li> </ul>		
WORKSHOP PARTICIPATION	<ul style="list-style-type: none"> <li>- IPRPI Workshop on Biomechanical Imaging, Inverse Problem Center, Rensselaer Polytechnic Institute, Troy, NY, April 2011</li> <li>- IPRPI Symposium on Inverse Problems and System Identification of Geosystems, Inverse Problem Center, Rensselaer Polytechnic Institute, Troy, NY, March 2010</li> <li>- 2nd NEES Annual Meeting, San Diego, CA, May 2004</li> <li>- 1st NEES Annual Meeting, Park City, UT, May 2003</li> <li>- NSF Workshop on Advanced Sensor Technology for Civil Engineering Systems, Austin, TX, April 2001</li> <li>- NSF NEES Community Requirements Workshop, Marina del Ray, CA, November 2000</li> <li>- The State of the Art in Vibration-Based Structural Damage Identification, Los Angeles, CA, March 2000</li> <li>- Large-Scale Structures in Acoustics and Electromagnetics: Proceedings of a Symposium, Commission on Physical Sciences, Mathematics, and Applications (CPSMA), National Research Council, Washington, DC, 1996</li> </ul>		

NATIONAL  
COMMITTEE  
SERVICE

Chair, ASCE Engineering Mechanics Institute Computational Mechanics Committee (2008-present)  
 Member, ASCE Engineering Mechanics Institute Dynamics Committee (since 1999)  
 Member, ASCE Engineering Mechanics Institute Elasticity Committee (since 2006)  
 Member, ASCE Engineering Mechanics Computational Mechanics Committee (since 2003)  
 Member, NEES (Network for Earthquake Engineering Simulation) Consortium IT (Information Technology) Committee (2003-2005)

UNIVERSITY  
COMMITTEE  
SERVICE

University	Member, Information Technology Committee	2007 - 2009
College	Member, Information Technology Committee	2000 - 2003
	Member, Graduate Admissions Committee, ICES	2001 - 2002
Department	Chair, SEMM Graduate Admissions Committee	2009 - 2010
	Chair, SEMM Graduate Curriculum Review Committee	2005 - 2006
	Chair, Teaching Award Committee	2004 - 2005
	Chair, PhD Qualifying Committee	2003 - 2004
	Chair, Information Technology Committee	2000 - 2003
	Chair, CE Website Design Committee	2001 - 2002
	Member, SEMM Graduate Admissions Committee	2007 - 2008
	Member, Long Range Planning Committee	2006 - 2007
	Member, Undergraduate Retention Committee	2005 - 2006
	Member, Teaching Award Committee	2002 - 2004
	Member, Strategic Planning Committee	2001 - 2002
	Member, PhD Qualifying Committee	1999 - present
	Member, Graduate Curricula & Policies Committee	2006 - 2009
Member, Information Technology Committee	1999 - 2000	

PEER REVIEW

- Computer Methods in Applied Mechanics and Engineering
- Computational Mechanics
- International Journal of Numerical Methods in Engineering
- Journal of Applied Mechanics
- Journal of Geophysical Engineering
- Journal of Petroleum Science and Engineering
- Computational Geosciences
- Computer Modeling in Engineering and Sciences
- Archive of Applied Mechanics
- Inverse Problems in Science and Engineering
- Journal of Petroleum Science and Engineering
- European Journal of Mechanics
- Finite Elements in Analysis and Design
- Soil Dynamics and Earthquake Engineering
- Journal of Earthquake Engineering
- Journal of the Acoustical Society of America
- ASCE Journal of Engineering Mechanics
- ASCE Journal of Geotechnical Engineering
- Earthquake Spectra
- Structural Engineering and Mechanics
- International Journal for Numerical Methods in Fluids
- World Scientific Publishing Company
- NSF Panels, NSF Proposal Reviewer
- NEES Consortium, Information Technology Review, 2003