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Publications

A. Books

1. L. Biegler, O. Ghattas, M. Heinkenschloss, and B. van Bloemen Waanders, eds., *Large-Scale PDE-Constrained Optimization*, Lecture Notes in Computational Science and Engineering, Springer-Verlag, 2003.
2. L. Biegler, O. Ghattas, M. Heinkenschloss, D. Keyes, and B. van Bloemen Waanders, eds., *Real-time PDE-Constrained Optimization*, SIAM series on Computational Science and Engineering, SIAM, 2007.

B. Refereed Articles

1. T. Bui-Thanh, K. Willcox, and O. Ghattas, Parametric Reduced-Order Models for Probabilistic Analysis of Unsteady Aerodynamic Applications, *AIAA Journal*, submitted.
2. A. Askan, V. Akcelik, J. Bielak, and O. Ghattas, Parametric analysis of a nonlinear least squares optimization-based anelastic full waveform inversion method, *Geophysical Journal International*, submitted.
3. T. Bui-Thanh, K. Willcox, and O. Ghattas, Model Reduction for Large-Scale Systems with High-Dimensional Parametric Input Space, *SIAM Journal on Scientific Computing*, to appear.
4. A. Askan, V. Akcelik, J. Bielak, and O. Ghattas, Full waveform inversion for seismic velocity and anelastic losses in heterogeneous structures, *Bulletin of Seismological Society of America*, 97(6):1990–2008, 2007.
5. C. Burstedde and O. Ghattas, Algorithmic Strategies for Full Waveform Inversion: 1D Experiments, *Proceedings of SEG 2007*, San Antonio, September, 2007.
6. O. Bashir, O. Ghattas, J. Hill, B. van Bloeman Waanders, and K. Willcox, Hessian-based model reduction for large-scale data assimilation problems, *2007 International Conference on Computational Science*, Beijing, China, May, 2007.

7. T. Bui-Thanh, K. Willcox, and O. Ghattas, Parametric Reduced-Order Models for Probabilistic Analysis of Unsteady Aerodynamic Applications, *2007 AIAA SDM Conference*, Honolulu, Hawaii, April 2007.
8. O. Bashir, K. Willcox, O. Ghattas, B. van Bloemen Waanders, and J. Hill, Hessian-based model reduction for large-scale systems with initial condition inputs, *International Journal for Numerical Methods in Engineering*, 73(6):844–868, 2008.
9. I. Pagani, A. Quist, O. Ghattas, R. Lal, P.R. LeDuc, Understanding subcellular structural domains in red blood cells through atomic force microscopy and confocal microscopy, *Blood*, submitted.
10. I. Pagani, H. Simon, O. Ghattas, P. LeDuc, Probing actin distribution in red blood cells using microfluidics, *Biotechnology and Bioengineering*, accepted, 2006.
11. L.F. Kallivokas, S.-W. Na, O. Ghattas, B. Jaramaz, Assessment of a fictitious domain method for patient-specific biomechanical simulation of press-fit orthopedic implantation, *International Journal on Numerical Methods in Engineering*, accepted pending revision.
12. T. Bui-Thanh, K. Willcox, O. Ghattas, B. van Bloemen Waanders, Goal-oriented, model-constrained optimization for reduction of large-scale systems, *Journal of Computational Physics*, 224(2):880-896, 2006.
13. V. Akcelik, G. Biros, O. Ghattas, J. Hill, D. Keyes, and B. van Bloemen Waanders, Parallel PDE constrained optimization, in *Parallel Processing for Scientific Computing*, M. Heroux, P. Raghavan, and H. Simon, eds, SIAM, 2006.
14. T. Tu, H. Yu, L. Ramirez-Guzman, J. Bielak, O. Ghattas, K.-L. Ma, and D.R. O'Hallaron, From mesh generation to scientific visualization: An end-to-end approach to parallel supercomputing, *Proceedings of IEEE/ACM SC06*, Tampa, Florida, Nov. 2006.
15. V. Akcelik, G. Biros, A. Draganescu, O. Ghattas, J. Hill, and B. van Bloemen Waanders, Inversion of Airborne Contaminants in a Regional Model, *Proceedings of 6th International Conference on Computational Science (ICCS 2006)*, Lecture Notes in Computer Science, Vol. 3991, Springer, Reading, UK, May 2006.
16. B. Bader, O. Ghattas, B. van Bloemen Waanders, and K. Willcox, An optimization framework for goal-oriented model-based reduction of large-scale systems, *44th IEEE Conference on Decision and Control*, Seville, Spain, December 2005.
17. J. Bielak, O. Ghattas, and E.J. Kim, Parallel octree-based finite element method for large-scale earthquake ground motion simulation, *Computer Modeling in Engineering and Sciences*, 10(2):99–112, 2005.
18. V. Akcelik, O. Ghattas, D. Keyes, K. Ko, L.-Q. Lee, and E. Ng, Adjoint methods for electromagnetic shape optimization of the low-loss cavity for the International Linear Collider, *Journal of Physics: Conference Series*, 16:435–445, 2005.
19. L.-Q. Lee, L. Ge, Z. Li, C. Ng, G. Schussman, K. Ko, E. Ng, W. Gao, P. Husbands, X. Li, C. Yang, V. Akcelik, O. Ghattas, D. Keyes, T. Tautges, H. Kim, J. Craftcheck, P. Knupp, L. Freitag Diachin, K.-L. Ma, Z. Bai, and G. Golub, Achievements in ISICs/SAPP collaborations for electromagnetic modeling of accelerators, *Journal of Physics: Conference Series*, 16:205–209, 2005.

20. K Ko, N Folwell, L Ge, A Guetz, V Ivanov, A Kabel, M Kowalski, L Lee, Z Li, C Ng, E Prudencio, G Schussman, R Uplenchwar, L Xiao, E Ng, W Gao, X Li, C Yang, P Husbands, A Pinar, D Bailey, D Gunter, L Diachin, D Brown, D Quinlan, R Vuduc, P Knupp, K Devine, J Kraftcheck, O Ghattas, V Akcelik, D Keyes, M Shephard, E Seol, A Brewer, G Golub, K Ma, H Yu, Z Bai, B Liao, T Tautges and H Kim, Impact of SciDAC on accelerator projects across the Office of Science through electromagnetic modeling, *Journal of Physics: Conference Series*, 16:195–204, 2005.
21. V. Akcelik, G. Biros, A. Dragenescu, J. Hill, O. Ghattas, and B. van Bloemen Waanders, Dynamic data-driven inversion for terascale simulations: Real-time identification of airborne contaminants, *Proceedings of SC05*, IEEE/ACM, Seattle, WA, November 2005.
22. T. Tu, D. O’Hallaron, and O. Ghattas, Scalable parallel octree meshing for terascale applications, *Proceedings of SC05*, IEEE/ACM, Seattle, WA, November 2005.
23. G. Biros and O. Ghattas, Parallel Lagrange-Newton-Krylov-Schur Methods for PDE-Constrained Optimization. Part I: The Krylov-Schur Solver, *SIAM Journal on Scientific Computing*, 27(2):687-713, 2005.
24. G. Biros and O. Ghattas, Parallel Lagrange-Newton-Krylov-Schur Methods for PDE-Constrained Optimization. Part II: The Lagrange-Newton Solver, and its Application to Optimal Control of Steady Viscous Flows, *SIAM Journal on Scientific Computing*, 27(2):714-739, 2005.
25. V. Akcelik, J. Bielak, G. Biros, I. Epanomeritakis, O. Ghattas, L. Kallivokas, and E. Kim, “An Online Framework for Inversion-Based 3D Site Characterization,” *Lecture Notes in Computer Science*, vol. 3038, p. 717-724, Springer, 2004.
26. V. Akcelik, J. Bielak, G. Biros, I. Epanomeritakis, A. Fernandez, O. Ghattas, E. Kim, J. Lopez, D. O’Hallaron, and T. Tu, and J. Urbanic, High-resolution forward and inverse earthquake modeling on terascale computers, *Proceedings of SC2003*, Phoenix, AZ, November 2003.
27. K.-L. Ma, A. Stempel, J. Bielak, O. Ghattas, and E. Kim, Visualizing very large-scale earthquake simulations, *Proceedings of SC2003*, Phoenix, AZ, November 2003.
28. J. Xu, J. Bielak, O. Ghattas, and J. Wang, Three-dimensional nonlinear seismic ground motion modeling in basins, *Physics of the Earth and Planetary Interiors*, 137(1–4):81–95, 2003.
29. G. Biros and O. Ghattas, Inexactness Issues in the Lagrange-Newton-Krylov-Schur method, in *Large-Scale PDE-Constrained Optimization*, L. Biegler, O. Ghattas, M. Heinkenschloss, and B. van Bloemen Waanders, eds., Springer-Verlag, Lecture Notes in Computational Science and Engineering series, Heidelberg, 2003.
30. V. Akcelik, G. Biros, O. Ghattas, K.R. Long, and B. van Bloemen Waanders, A Variational Finite Element Method for Source Inversion for Convective-Diffusive Transport, *Finite Elements in Analysis and Design*, 39:683–705, 2003.
31. I. Malcevic and O. Ghattas, Dynamic Mesh Finite Element Method for Lagrangian Computational Fluid Dynamics, *Finite Elements in Analysis and Design*, 38(10):965–982, 2002.

32. V. Akcelik, G. Biros, and O. Ghattas, Parallel Multiscale Gauss-Newton-Krylov Methods for Inverse Wave Propagation, *Proceedings of SC2002*, Baltimore, MD, Nov. 2002. (Received Best Technical Paper Award).
33. V. Akcelik, B. Jaramaz, and O. Ghattas, Nearly Orthogonal Two-Dimensional Grid Generation with Aspect Ratio Control, *Journal of Computational Physics*, 171(2):805–821, 2001.
34. S. Bollapragada, O. Ghattas, and J.N Hooker, Optimal Design of Truss Structures by Logic-Based Branch and Cut, *Operations Research*, 41(1):42-51, Jan–Feb 2001.
35. J. Antaki, G. Blelloch, O. Ghattas, I. Malcevic, G. Miller, N. Walkington, A Parallel Dynamic-Mesh Lagrangian Method for Simulation of Flows with Dynamic Interfaces, *Proceedings of SC2000*, Dallas, Texas, Nov. 2000.
36. G. Biros and O. Ghattas, Parallel Newton-Krylov Methods for PDE-Constrained Optimization, *Proceedings of Supercomputing '99*, Portland, OR, November 1999.
37. G. Biros and O. Ghattas, Parallel Domain Decomposition Methods for Optimal Control of Viscous Incompressible Flows, *Proceedings of Parallel CFD '99*, Williamsburg, Virginia, USA, May 23-26, 1999.
38. J. Bielak, J. Xu, and O. Ghattas, Earthquake Ground Motion and Structural Response in Alluvial Valleys, *Journal of Geotechnical and Geoenvironmental Engineering*, Vol. 125, No. 5, pp. 404-412, May 1999.
39. Y. Hisada, H. Bao, J. Bielak, O. Ghattas, D. O'Hallaron, Simulations of Long-Period Ground Motions during the 1995 Hyogoken-Nanbu (Kobe) Earthquake using 3D Finite Element Method, *Proceedings of the 2nd International Symposium on Effect of Surface Geology on Seismic Motion*, Yokohama, Japan, December 1998.
40. O. Ghattas and X. Li, Domain Decomposition Methods for Sensitivity Analysis of A Non-linear Aeroelasticity Problem, *International Journal of Computational Fluid Dynamics*, Vol. 11, pp. 113–130, 1998.
41. H. Bao, J. Bielak, O. Ghattas, L.F. Kallivokas, D.R. O'Hallaron, J.R. Shewchuk, and J. Xu, Large-Scale Simulation of Elastic Wave Propagation in Heterogeneous Media on Parallel Computers, *Computer Methods in Applied Mechanics and Engineering*, Vol.152, No.1–2, P.85–102, 1998.
42. B. He, O. Ghattas, and J.F. Antaki, Continuous shape sensitivity of incompressible Navier-Stokes flows, *Proceedings of the Seventh AIAA/USAF/NASA/ISSMO Symposium on Multidisciplinary Analysis and Optimization*, St. Louis, Missouri, September 1998.
43. O. Ghattas and J. Bark, Optimal Control of Two- and Three-Dimensional Incompressible Navier Stokes Flows, *Journal of Computational Physics*, Vol.136, P.231–244, 1997.
44. C.E. Orozco and O. Ghattas, A Reduced Sand Method for Optimal Design of Nonlinear Structures, *International Journal for Numerical Methods in Engineering*, Vol.40, No.2, pp. 2759–2774, 1997.
45. O. Ghattas and J. Bark, Large-scale SQP methods for optimization of Navier-Stokes flows, *Large-Scale Optimization with Applications; Part II: Optimal Design and Control*, Vol. 93, pp. 247–270, IMA Volumes in Mathematics and its Applications, L.T. Biegler, T.F. Coleman, A.R. Conn, and F.N. Santosa, eds., Springer-Verlag, 1997.

46. O. Ghattas and C.E. Orozco, A parallel reduced Hessian SQP method for shape optimization, *Multidisciplinary Design Optimization: State-of-the-Art*, N.M. Alexandrov and M.Y. Hussaini, eds., SIAM, 1997, pp. 133-152.
47. H. Bao, J. Bielak, O. Ghattas, L. Kallivokas, D. O'Hallaron, J. Shewchuk, and J. Xu, Earthquake Ground Motion Modeling on Parallel Computers, in *Proceedings of Supercomputing '96*, Pittsburgh, November 1996.
48. C.E. Orozco and O. Ghattas, Infeasible Path Optimal Design Methods, with Application to Aerodynamic Shape Optimization, *AIAA Journal*. Vol.34, No.2, pp. 217–224, 1996.
49. C.E. Orozco and O. Ghattas, A reduced SAND method for nonlinear design problems in mechanics, *Proceedings of the 37th Structures, Structural Dynamics, and Materials Conference*, pp. 996–1004, Salt Lake City, UT, April 1996.
50. J.F. Antaki, O. Ghattas, G.W. Burgreen, B. He, Computational Flow Optimization of Rotary Blood Pump Components, *Artificial Organs*, Vol.19, No.7, pp. 608–615, 1995.
51. O. Ghattas and X. Li, A Variational Finite Element Method for Stationary Nonlinear Fluid-Solid Interaction, *Journal of Computational Physics*, Vol. 121, pp. 347–356, 1995.
52. S. Shah, L. Kallivokas, B. Jaramaz, O. Ghattas, and A.M. Digioia, The Fictitious Domain Method for Patient-Specific Biomechanical Modeling: Promise and Prospects, *Proceedings of The Second International Symposium on Medical Robotics and Computer-Assisted Surgery (MRCAS95)*, pp. 329–333, Baltimore, MD, November 1995.
53. R.V. O'Toole, D.A. Simon, B. Jaramaz, O. Ghattas, M.K. Blackwell, L. Kallivokas, F. Morgan, C. Visnic, A.M. Digioia, and T. Kanade, Towards More Capable and Less Invasive Robotic Surgery in Orthopaedics, *Proceedings of The First International Conference on Computer Vision, Virtual Reality, and Robotics in Medicine (CVRMed95)*, pp. 123–130, Nice, France, April 1995.
54. J.R. Shewchuk and O. Ghattas, A Compiler for Parallel Finite Element Methods with Domain-Decomposed Unstructured Meshes, *Contemporary Mathematics*, Vol. 180, pp. 445-450, 1994.
55. C.D. Visnic, R.H. Reid, O. Ghattas, A.M. Digioia III; B. Jaramaz, Finite Element Pre-Operative Simulation of Cementless Hip Replacement, *Proceedings of The 1994 Winter Simulation Conference*, Ed. J.D. Tew, S. Manivannan, D.A. Sadowski, and A.F. Seila, pp. 856–860, ACM, Lake Buena Vista, FL, December 1994.
56. B. He, O. Ghattas, J. Antaki, and T. Dennis, Shape optimization of Navier Stokes flows, with application to optimal design of artificial heart components, *Proceedings of the Fifth AIAA/NASA/ USAF/ISSMO Symposium on Multidisciplinary Analysis and Optimization*, pp. 1202–1212, Panama City, FL, September 1994.
57. O. Ghattas and X. Li, A variational finite element method for nonlinear fluid-solid interaction and its sensitivity analysis, *Proceedings of the Fifth AIAA/NASA/USAF/ISSMO Symposium on Multidisciplinary Analysis and Optimization*, Panama City, FL, September 1994.
58. E. Schwabe, G. Blelloch, A. Feldmann, O. Ghattas, J. Gilbert, G. Miller, D. O'Hallaron, J. Shewchuk, and S. Teng, A Separator-Based Framework for Automated Partitioning and

- Mapping of Parallel Algorithms for Numerical Solution of PDEs, in *Issues and Obstacles in The Practical Implementation of Parallel Algorithms and The Use of Parallel Machines*, pp. 48–62, Dartmouth, June, 1992.
59. C.E. Orozco and O. Ghattas, Massively Parallel Aerodynamic Shape Optimization, *Computing Systems in Engineering*, Vol. 3, No. 1, pp. 311-320, 1992.
 60. C.E. Orozco and O. Ghattas, A Sparse Approach to Simultaneous Analysis and Design of Geometrically-Nonlinear Structures, *AIAA Journal*, Vol.30, No.3, pp. 1877–1885, 1992.
 61. C.E. Orozco and O. Ghattas, Optimal design of systems governed by nonlinear partial differential equations, *Proceedings of the Fourth Symposium on Multidisciplinary Analysis and Optimization*, pp. 1126–1140, Cleveland, OH, September 1992.
 62. I.E. Grossmann, V.T. Voudouris, and O. Ghattas, Mixed-integer linear programming formulations of some nonlinear discrete design optimization problems, *Recent Advances in Global Optimization*, pp. 478–512, C.A. Floudas and P.M. Pardalos, eds., Princeton University Press, 1992.
 63. G.M. Turkiyyah and O. Ghattas, Geometric Reasoning for Shape Design, *Proceedings of The Ninth National Conference on Artificial Intelligence (AAAI-91)*, pp. 874–879, Irvine, CA, July 1991.
 64. C.E. Orozco and O. Ghattas, Jacobian and Hessian sparsity in simultaneous and nested structural optimization, *Proceedings of the 32nd Structures, Structural Dynamics, and Materials Conference*, pp. 413–423, Baltimore, MD, April 1991.
 65. O. Ghattas and S.C. Jang, Computational strategies for large-scale structural inverse problems, *Proceedings of the 32nd Structures, Structural Dynamics, and Materials Conference*, pp. 1475–1486, Baltimore, MD, April 1991.
 66. O. Ghattas, The Minimum Bandwidth Problem As An Assignment Problem with Side Constraints, *Engineering Optimization*, Vol. 15, No. 3, pp. 163-169, 1990.
 67. O. Ghattas and R.J. Melosh, Structural optimization of stress-constrained indeterminate trusses as a linear programming problem, *Proceedings of the 31st Structures, Structural Dynamics and Materials Conference*, pp. 334–344, Long Beach, CA, May 1990.
 68. R.J. Melosh, H.A. Smith, and O. Ghattas, A technology in transition: finite element analysis, *Developments in Theoretical and Applied Mechanics*, Vol. 14, pp. 1–16, S.Y. Wang, R.M. Hackett, S.L. Deleeuw, and A.M. Smith, eds., University of Mississippi, 1988.
 69. M. Biswas, O. Ghattas, and H. Vladimirov, Fatigue and Freeze-Thaw Resistance of Epoxy Mortar, *Transportation Research Record*, 1041, 1985.

C. Other Publications

1. O. Ghattas, *Scalable Parallel Algorithms for Inverse Problems in Subsurface Modeling*, chapter in Report of the Computational Subsurface Sciences Workshop, DOE Office of Science, April 2007.
2. P. Olson, B. Aagard, W. Bangerth, O. Ghattas, L. Kellogg, L. Montesi, J. Tromp, S. Zhong, *The Path to Petascale Computing in Geodynamics*, A report by the Computational Infrastructure for Geodynamics (CIG) Science Steering Committee to the National Science Foundation, December 2006.

3. V. Akcelik, J. Bielak, I. Epanomeritakis, O. Ghattas, and E. Kim, "High fidelity forward and inverse earthquake modeling in large basins," *Proceedings of the Sixth European Conference on Structural Dynamics EURODYN05*, Paris, France, September 2005.
4. B. van Bloemen Waanders (ed.), B. Bader, R. Bartlett, J. Berr y, R. Bilisoly, P. Boggs, R. Carr, S. Collis, A. Cooper, A. Draganescu, G. Hammond, W. Har t, J. Hill, S. McKenna, P. Lin, K. Long, S. Margolis, C. Peyton, C. Phillips, M. Sala, A. Salinger, J. Shadid, C. Silva, R. Tuminaro, V. Tidwell, B. van Bloemen Waanders, J. Watson, L. Yarrington, V. Akcelik, L. Biegler, G. Biros, S. Buchberger, S. Bujanda, O. Ghattas, H. Greenberg, P. Howard, R. Janke, G. Konjevod, C. Laird, E. Lauer, Z. Li, H. Lin, R. Murray, J. Uber, K. Willcox, *Algorithm and Simulation Development in Support of Response Strategies for Contamination Events in Air and Water Systems*, Sandia Report SAND2006-0074, January 2006.
5. O. Ghattas, PDE-constrained optimization, SIAM News, July 2005.
6. B. G. van Bloemen Waanders, R. A. Bartlett, S.S. Collis, E.R. Keiter, C.C. Ober, T.M. Smith, V. Akcelik, O. Ghattas, J.C. Hill, M. Berggren, M. Heinkenschloss, L.C. Wilcox, Sensitivity Technologies for Large Scale Simulation, Sandia Report SAND2004-6574, January, 2005.
7. E. Kim, J. Bielak, and O. Ghattas, "Large-scale Northridge Earthquake simulation using octree-based multiresolution mesh method," Proceedings of 16th ASCE Engineering Mechanics Conference, Seattle, Washington, July 2003.
8. L. Biegler, O. Ghattas, M. Heinkenschloss, and B. van Bloemen Waanders, Large-scale PDE-constrained optimization: An introduction, in *Large-Scale PDE-Constrained Optimization*, L. Biegler, O. Ghattas, M. Heinkenschloss, and B. van Bloemen Waanders, eds., Springer-Verlag, Lecture Notes in Computational Science and Engineering series, Heidelberg, 2003.
9. O. Ghattas and I. Malcevic, Parallel dynamic unstructured mesh methods with application to Lagrangian simulation of flows with deformable boundaries, *Proceedings of the 7th International Conference on Numerical Grid Generation in Computational Field Simulations*, Whistler, BC, September 25-28, 2000.
10. G. Biros and O. Ghattas, A Lagrange–Newton–Krylov–Schur Method for PDE-Constrained Optimization, in *SIAG/OPT Views-and-News*, v.11, Aug. 2000, newsletter of the SIAM Activity Group on Optimization, special issue on PDE-constrained optimization.
11. V. Akcelik, B. Jaramaz, and O. Ghattas, Automated CT-based generation of three-dimensional anatomic meshes, *Proceedings of ICMMB-11: International Conference on Mechanics in Medicine and Biology*, Maui, Hawaii, April 2000.
12. J. Bielak, Y. Hisada, H. Bao, J. Xu, and O. Ghattas, One- Vs Two- Or Three- Dimensional Effects in Sedimentary Valleys, *Proceedings of The 12th World Conference on Earthquake Engineering*, New Zealand, February 2000.
13. J. Bielak, H. Bao, and O. Ghattas, Ground motion modeling using 3D finite element methods, *Proceedings of the 2nd International Symposium on Effect of Surface Geology on Seismic Motion*, Yokohama, Japan, December 1998.

14. 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, 389–390, Winter Annual Meeting, ASME, Atlanta, Georgia, November 1996.
15. J. Bielak, O. Ghattas, T.R. Gross, and D.R. O’Hallaron, Strategic research directions in earthquake ground motion modeling on parallel computers, *ACM Workshop on Strategic Directions in Computing Research*, Cambridge, MA, June, 1996.
16. J. Bielak, K. Aki, O. Ghattas, T. Gross, D.R. O’Hallaron, F. Sanchez-Sesma, H. Bao, Y. Hisada, L.F. Kallivokas, J.R. Shewchuk, J.M. Stichnoth, and J. Xu, Earthquake ground motion modeling in large basins, *Proceedings of the NSF Grand Challenges Workshop*, Washington, D.C., March 1996.
17. T. Kanade, A.M. DiGioia, O. Ghattas, B. Jaramaz, M. Blackwell, L.F. Kallivokas, F. Morgan, S. Shah, and D.A. Simon, Simulation, planning, and execution of computer-assisted surgery, *Proceedings of the NSF Grand Challenges Workshop*, Washington, D.C., March, 1996.
18. 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, *Robotics and Machine Perception, SPIE’s International Technical Working Group Newsletter, Special Issue on Robotics for Biomedical Applications*, Vol. 4 (1), p. 8, April 1995.
19. R.H. Reid, A.M. DiGioia, B. Jaramaz, and O. Ghattas, Press-fit femoral implants yield high assembly strains in cortical bone, in *Proceedings of the 1995 Bioengineering Conference*, ASME-Bioengineering Division, vol. 29, pp. 561-562, 1995.
20. C. Visnic, A.M. DiGioia, B. Jaramaz, and O. Ghattas, Contact-coupled axisymmetric model of a cementless acetabular implant, *Proceedings of the 6th Annual International ANSYS Conference*, Pittsburgh, PA, May 1994.
21. X. Li, J. Bielak, and O. Ghattas, Seismic response in a three-dimensional basin on a CM–2, *Proceedings of the Eighth International Conference of the International Association for Computer Methods and Advances in Geomechanics*, Morgantown, WV, May 1994.
22. C. Orozco and O. Ghattas, SQP methods for inverse airfoil design, *Proceedings of the 11th Conference on Analysis and Computation*, pp. 297–306, ASCE, Atlanta, GA, April 1994.
23. X. Li, J. Bielak, and O. Ghattas, Three-dimensional earthquake site response on a CM-2, in *Proceedings of the Tenth World Conference on Earthquake Engineering*, pp. 959–964, Madrid, Spain, July 1992.
24. O. Ghattas and S.K. Schrader, Optimal topologies of structures by nonlinear programming, *Proceedings of the NSF Grantees Conference on Design and Manufacturing Systems*, Atlanta, GA, January 1992.
25. O. Ghattas and I.E. Grossmann, MINLP and MILP strategies for discrete sizing structural optimization problems, *Proceedings of the Tenth ASCE Conference on Electronic Computation*, pp. 197–204, Indianapolis, IN, April 1991.

26. G.M. Turkiyyah and O. Ghattas, Systematic shape parameterization in design optimization, *Sensitivity Analysis and Optimization with Numerical Methods*, S. Saigal and S. Mukherjee, eds., ASME AMD-Vol. 115, 1990.

Institute for Computational Engineering and Sciences. Omar Ghattas. Omar Ghattas. University of Texas at Austin | UT - Institute for Computational Engineering and Sciences. 35.31. - Continuing our previous work [T. Bui-Thanh and O. Ghattas, Inverse Probl. 28, No. 5, Article ID 055001, 32 p. (2012; Zbl 1239.78006); ibid. Omar Ghattas. Quite the same Wikipedia. Just better. - Omar Ghattas is the John A. and Katherine G. Jackson Chair in Computational Geosciences, a Professor of Mechanical Engineering and Geological Sciences at the The University of Texas at Austin. He is also the director of the Center for Computational Geosciences at the Institute for Computational Engineering and Sciences.[1] [2] [3]. Musician: Omar M Ghattas. 1,073 likes. Just For Music. - Hi Musician: Omar M Ghattas, Sounds great! Good radio potential. Email me at sandra@wmic-radio.com. Sandra www.wmic-radio.com. Omar M Ghattas. January 11, 2014 at 8:49 PM. Omar M Ghattas. January 11, 2014 at 8:49 PM. English (US) - Espaol - PortuguAs (Brasil) - Franais (France) - Deutsch. Dr. Omar Ghattas is the John A. and Katherine G. Jackson Chair in Computational Geosciences, Professor of Geological Sciences and Mechanical Engineering, and Director of the Center for Computational Geosciences in the Institute for Computational Engineering and Sciences (ICES) at The University of Texas at Austin. - He earned BS, MS, and Ph.D degrees from Duke University in 1984, 1986, and 1988. Ghattas has general research interests in simulation and modeling of complex