

M. Asghar Bhatti

Department of Civil & Environmental Engineering

University of Iowa

Iowa City, IA 52242

(Tel: 319-335-5656; Fax: 319-335-5660; E-mail: asghar-bhatti@uiowa.edu)

Higher Education

- University of California, Berkeley, CA, 1975-1980, Department of Civil Engineering, Division of Structural Engineering and Structural Mechanics, Ph.D. degree received in 1980.
- University of California, Berkeley, CA, 1974-1975, Department of Civil Engineering, Division of Structural Engineering and Structural Mechanics, M.S. degree received in 1980.
- University of Karachi, N.E.D. Engineering College, Department of Civil Engineering, Karachi, Pakistan, B.E. (Civil Engineering) degree received in 1973.

Professional Record

- July 2006 – present, Professor, Department of Civil and Environmental Engineering, University of Iowa, Iowa City, IA, USA
- Summer 2006 - Summer 2011, Summer Sessions, University of California, Irvine, CA, USA
- Summer 2009, Summer 2010, Summer 2012, Summer Session, University of California, Los Angeles, CA, USA
- July 1985 – June 2006, Associate Professor, Department of Civil and Environmental Engineering, University of Iowa, Iowa City, IA, USA
- July 1980 – June 1985, Assistant Professor, Department of Civil and Environmental Engineering, University of Iowa, Iowa City, IA, USA
- January 2000 – May 2000, Visiting Associate Professor, King Fahd University of Petroleum and Minerals, Dhahran, Saudi Arabia
- June 1983 – August 1983, Visiting Assistant Professor, Korea Advanced Institute of Science and Technology (KAIST), Seoul, South Korea.
- November 1979 – July 1980, Research Engineer, University of California, Berkeley, CA.
- February 1978 – April 1979, Research Engineer, Earthquake Engineering Systems Inc., San Francisco, CA.
- July 1973 – July 1974, Design Engineer, National Engineering Services (Pakistan) Ltd., Karachi, Pakistan.

Honors and Awards

- Excellence in Teaching and Dedication to Student Success, University of Iowa, Civil & Environmental Engineering Graduating Class of December 2011.
- Fellow, American Society of Civil Engineers (ASCE). Elected to Fellow 1999.
- Collegiate Teaching Award, College of Engineering, University of Iowa Council on Teaching, 1997.
- Dow Outstanding Young Faculty Award, American Society of Engineering Education, 1985.
- G.N. Gokhale Gold Medal, Best Civil Engineering Graduate, University of Karachi, Pakistan, 1973.

Professional activities

1. Fulbright Specialist, School of Mechanical & Manufacturing Engineering, National University of Sciences and Technology, H-12, Islamabad, Pakistan, December 2014 – January 2015.
2. Fulbright Senior Lecturer, Centro Universitario de la Defensa, University of Vigo, Spain, August 2014- December 2014.
3. Chairman, Civil Engineering Division, American Society of Engineering Education, 2013-2014.
4. Program Chair, 2012 Annual Conference, American Society of Engineering Education, Civil Engineering Division, San Antonio, TX, 2012.
5. Associate Editor, ASCE Journal of Structural Engineering, June 2005-2009.
6. Consulting Member, ACI 318-0C, Structural Concrete Building Code Subcommittee on Safety, Serviceability, and Analysis, 2009-Present.
7. Co-Chairman, 20th Analysis and Computation Specialty Conference, Structural Engineering Institute, American Society of Civil Engineers, Chicago, IL, 2012.
8. Co-Chairman, 19th Analysis and Computation Specialty Conference, Structural Engineering Institute, American Society of Civil Engineers, Orlando, FL, 2010.
9. Co-Chairman, 18th Analysis and Computations Specialty Conference, Structural Engineering Institute, American Society of Civil Engineers, Vancouver, BC, Canada, April 24-26, 2008.
10. Chairman, Methods of Analysis Committee, Analysis and Computation Technical Activities Division, Structural Engineering Institute, American Society of Civil Engineers, 2007 – 2011.
11. Director, American Society of Engineering Education, Civil Engineering Division, 2007 - 2011.
12. Treasurer/Secretary, American Society of Engineering Education, Civil Engineering Division, 2004-2007.

13. Co-Chairman, Fifth International Symposium on Maintenance and Rehabilitation of Pavements and Technological Control, iSmarti, August 2007, Park City, Utah.
14. Member, SEI/ASCE, Analysis and Computation Technical Committee: Optimal Structural Design, 1982-1990, 1998 – 2004.
15. Member, SEI/ASCE, Analysis and Computation Technical Committee: Methods of Analysis, 2002 – 2007.
16. Member, SEI/ASCE, Analysis and Computation Technical Committee: Emerging Computing Technology, 2002 - Present
17. Member Committee A5008, Transportation Research Board, National Academy of Sciences, Committee on Artificial Intelligence and Advanced Computing Applications in Transportation, 2002-2008.
18. Member, Transportation & Development Institute (T&DI) of the American Society of Civil Engineers, Infrastructure Systems Technical Committee: Emerging Computing Technology, 2002 – 2008.
19. Member, Organizing Technical Committee, Second International Symposium on Maintenance and Rehabilitation of Pavements and Technological Control, July 29 – August 1, 2001, Auburn, Alabama
20. Member, American Society of Engineering Education (ASEE).
21. Treasurer/Secretary ASEE North Midwest Section, 1997-98.
22. Member, American Concrete Institute (ACI).
23. Member, ACI Committee 118: Use of Computers, 1984-2000.

Books

1. M. A. Bhatti, **Advanced Topics in Finite Element Analysis of Structures: with Mathematica and MATLAB Computations**, 590 pages, ISBN 0-471-64807-9, John Wiley, New York 2006.
2. M. A. Bhatti, **Fundamental Finite Element Analysis and Applications: with Mathematica and MATLAB Computations**, 700 pages, ISBN 0-471-64808-6, John Wiley, New York 2005.
3. M. A. Bhatti, **Practical Optimization Methods With Mathematica Applications**, 715 page textbook with CD, ISBN 0-387-98631-6, Springer-Verlag, New York, 2000.

Journal Papers

1. Ahmet Öztaşa, Murat Palab, Erdoğan Özbayb, Erdoğan Kancab, Naci Çağlar, and M. Asghar Bhatti, Predicting the compressive strength and slump of high strength concrete using neural network, Journal of Construction and Building Materials, Volume 20, Issue 9, November 2006, Pages 769-775.
2. Bhatti, M.A., Vignes, R. and Han, R.P.S., Muscle Forces and Fatigue in a Virtual Soldier Environment, SAE 2005 Transactions Journal of Passenger Cars – Mechanical Systems, Paper No. 2005-01-2712, pp. 2930-2936, March 2005.
3. Nishiyama, T., Lee, H., and Bhatti, M.A., “Investigation of Bonding Condition in Concrete Overlay by Laboratory Testing, Finite Element Modeling and Field Evaluation” Transportation Research Record, Journal of the Transportation Research Board, No. 1933, TRB 2005, pp. 15-23.
4. Obadat, M., Lee, H., Bhatti, M.A. and Maclean, B., “Full-Scale Field Evaluation of Microelectromechanical System-Based Biaxial Strain Transducer and Its Application in Fatigue Analysis” Journal of Aerospace Engineering, ASCE, Vol 16, No. 3, pp. 100-107, July 2003.
5. Bhatti, M.A., “Graphical Representation of Constrained Optimization Problems”, Mathematica In Education and Research, Vol. 8, No3-4, pp 37-42, 1999.
6. Bhatti, M.A., Molinas-Vega, Idelin and Stoner, J.W., “Nonlinear Analysis of Jointed Concrete Pavements”, Paper No. 98-1063, pp. 50-57, Transportation Research Record, No. 1629, 1998.
7. Bhatti, M.A. and Stoner, J.W., “Nonlinear Pavement Distress Model Using Dynamic Vehicle Loads”, ASCE Journal of Infrastructure Systems, pp. 71-78, Vol. 4, No. 2, June 1998.
8. Bhatti, M.A. and Almughrabi, A., “A Refined Model to Estimate Torsional Strength of Reinforced Concrete Beams”, ACI Structural Journal, pp. 614-622, Vol. 95, No. 5, September/October 1996.
9. Bhatti, M.A., “Mathematica as a Teaching and Research Aid in Finite Element Analysis”, Journal of Mathematical Modeling and Scientific Computing, April 1996.
10. Bhatti, M.A., “Optimum Cost Design of Partially Composite Steel Beams Using LRFD”, AISC Engineering Journal, pp. 18-29, Vol 33, No. 1, First Quarter 1996.
11. Bhatti, M.A., Barlow, J., and Stoner, J.W., “Modeling Damage To Rigid Pavements Caused By Subgrade Pumping”, ASCE Transportation Journal, pp. 12-21, Vol 122, No. 1, January/February 1996.
12. Molinas-Vega, I., M. A. Bhatti, and W. F. Nixon, “A Nonlinear Fatigue Damage Model for Concrete in Tension”, International Journal for Damage Mechanics, p. 362-379, Vol. 4, October 1995.

13. Bhatti, M.A. and J. D. Hingtgen., “Effect of Connection Stiffness and Plasticity on the Behavior of Unbraced Steel Frames”, AISC Engineering Journal, pp. 21-33, Volume 32, No. 1, 1995.
14. Bhatti, M.A., J. W. Stoner, and J. D. Hingtgen., “Simulation of Dynamic Loads from Alternative Vehicle Configurations”, Heavy Vehicle Systems, International Journal of Vehicle Design, pp. 396-416, Vol. 1, No. 4, 1994.
15. Bhatti, M.A., Teng, Susanto, and Ashton, W.D., “Simplified Analysis of a Cracked Concrete Arch Dam”, Concrete International, p. 53-57, January 1994.
16. Febres-Cedillo, H.E., and Bhatti, M.A., “Parametric Modeling of Earthquake Response Spectra”, International Journal of Soil Dynamics and Earthquake Engineering, pp. 291-302, vol. 10, No. 6, August 1991.
17. Bhatti, M. Asghar, “Developing Engineering Design Software Using HyperCard”, Microcomputers in Civil Engineering, vol. 3, pp. 111-126, 1988.
18. Febres-Cedillo, H.E. and Bhatti, M.A., “A Simple Strain Energy Based Mesh Refinement Scheme”, Computers and Structures, Vol. 28, no. 4, pp. 523-533, 1988.
19. Rajan, S. D and Bhatti, M. A., “SADDLE: Structural Analysis and Dynamic Design Language, Part II: Database management system”, Computers and Structures, Vol. 22, No. 2, pp. 205-212, 1986.
20. Rajan, S. D. and Bhatti, M. A., “SADDLE: Structural Analysis and Dynamic Design Language, Part I: Design System”, Computers and Structures, Vol. 22, No. 2, pp. 185-204, 1986.
21. Bhatti, M.A., Raza, S.M.N., and Rajan, S.D. “Preliminary Optimal Design of Cable-Stayed Bridges”, Engineering Optimization, Vol. 8, 1985, pp. 265-289.
22. Yang, R.J. and Bhatti, M.A., “Nonlinear, Static and Dynamic Analysis of Plates”, Journal of Engineering Mechanics, Vol. 111, No. 2, February 1985, pp. 175-187.
23. Rajan, S. D., and Bhatti, M. A., “On Designing a Database Management system for a Computer Aided Engineering Software System”, Computers and Structures, Vol. 21, No. 5, pp. 1047-1057, 1985.
24. Rajan, S. D. and Bhatti, M. A., “Data Management in FEM-Based Optimization Software”, Computers and Structures, Vol. 16, No. 1-4, pp. 317-325, 1983.
25. Bhatti, M. A., Ciampi, V., Kelly, J. M. and Pister, K. S., “An Earthquake Isolation System for Steam Generators in Nuclear Power Plants”, Nuclear Engineering and Design, v.73, pp. 229-252, 1982.
26. Bhatti, M. A. and Pister, K. S., “A Dual Criteria Approach for Optimal Design of Earthquake Resistant Structural Systems”, Earthquake Engineering and Structural Dynamics, Vol. 9, November-December 1981, pp. 557-572.
27. Bhatti, M. A., Pister, K. S. and Polak, E., “A Package for Optimization Based Interactive CAD”, ASCE Journal of Structural Division, Vol. 107, No. ST 11, November 1981, pp. 2271-2284.

28. Bhatti, M. A. and Pister, K. S., “Transient Response Analysis of Structural Systems with Nonlinear Behavior,” Computers and Structures, Vol. 12, January, 1981, pp. 181-188.

Publications with rigorous peer review

1. Bhatti, M.A., “A Mathematica Based Environment for Analysis and Optimum Design of Composite Structures”, Computer Aided Optimum Design of Structures, Editors: S. Hernandez, A.J. Kassab, and C. A. Brebbia, pp. 301-310, WIT Press, Southampton, UK, 1999.
2. Bhatti, M.A., Lin, Baizhong and Stoner, J.W. “Dynamic Simulation Based Pavement Consumption Model”, ASCE Special publication on Infrastructure Condition Assessment: Art, Science, and Practice, (Editor: Mitsuru Saito), pp. 161-170, 1997.
3. Bhatti, M.A., Lin, Baizhong, and Molinas-Vega, I., “Effect of Openings on Deflections and Strength of Reinforced Concrete Slabs”, ACI Special Publication SP-161, Recent Developments in Deflection Evaluation of Concrete Structures, (Editor: E. G. Nawy), pp. 149-164, November 1996.
4. Bhatti, M.A., “Role of Computer Algebra Systems in Structural Design Practice”, Computing & Information Technology for Architecture, Engineering & Construction, (Editors: H. K. Lye, C. Y. Sang, and H. Adeli) pp. 71-78, May 1996.
5. Bhatti, M.A. and Al-Gahtani, A.S., “Optimum Design of Welded Plate Girders Subjected to Highway Bridge Loading”, WIT Transactions on the Built Environment, vol 13, WIT Press, www.witpress.com, ISSN 1743-3509, pp. 225-232, 1995.
6. Bhatti, M. A., Ciampi, V. and Pister, K. S., “Interactive Optimal Design of Dynamically Loaded Structures”, Optimum Structural Design, E. Atrek, R. H. Gallagher, K. M. Ragsdell, and O. C. Zienkiewicz (Editors), John Wiley, 1984, pp. 633-662.
7. Bhatti, M. A. and Pister, K. S., “Applications of Optimal Design to Structures Subjected to Earthquake Loading”, pp. 620 - 649, Optimization of Distributed Parameter Structures: Volume I, E. J. Haug and J. Cea (Editors), Sijthoff and Noordhoff 1981.
8. Bhatti, M. A., Essebo, T., Nye, W., Pister, K. S., Polak, E., Sanjiovanni, A. and Tits, A., “A Software System for Optimization Based Interactive Computer-Aided Design”, pp. 602 - 619, Optimization of Distributed Parameter Structures: Volume I, E. J. Haug and J. Cea (Editors), Sijthoff and Noordhoff 1981.
9. Bhatti, M.A., Pister, K.S., and Polak, E., “Optimization of Control Devices in Base Isolation Systems for Aseismic Design”, pp. 127 - 138, Structural Control, H. H. E. Leipholz (Editor), North-Holland Publishing Company and SM Publications 1980.

Conference proceedings (with full paper peer review)

1. Bhatti, M.A. and Bektur, Alkan, “Optimum Design of Base Isolated Structures Considering Life Cycle Costs”, International Conference on Earthquake Engineering and Seismology (ICEES), Islamabad, Pakistan, April 24-26, 2011.
2. Constantinescu, G., Bhatti, M.A., and Tokyay, T., “A Numerical Study of Wind Loads on Large Highway Sign Structures”, 18th Analysis and Computation Specialty Conference, Vancouver, Canada, April 23-26, 2008.
3. Nishiyama, T., Bhatti, M.A., and Lee, H., “Evaluation of Pavements with Thin-Bonded Concrete Overlays Through 3D Finite Element Modeling”, pp. 67-72, Proceedings of the Fifth Conference On Maintenance and Rehabilitation of Pavements and Technological Control, Park City, Utah, August 8-10, 2007.
4. Bhatti, M.A., “Retaining Wall Design Optimization with MS Excel Solver” Paper 34, Proceedings of the 17th Analysis And Computation Specialty Conference, May 18–21, 2006, St. Louis, Missouri, USA.
5. Bhatti, M.A., Ryan Vignes, and Ray P.S. Han, “Incorporating Muscle Fatigue in a Virtual Soldier Environment”, International Soldier Systems Conference, December 13-16, 2004, Boston, MA.
6. Obadat, M., Lee, H., Bhatti, M.A., and Maclean, B., “Development of Peripheral Interface Controller Microcontroller for Smart MEMS Sensor” Paper 04-4902, 83rd Annual TRB Meeting, January 2004.
7. Obadat, M., Lee, H., Bhatti, M.A., and Maclean, B., “Full-Scale Field Evaluation of MEMS-Based Biaxial Strain Transducer in Predicting Fatigue Life of Rail Structure”, Paper No. 03-3326, 82nd Annual TRB Meeting, January 2003.
8. Chen, X., Lee, H., and Bhatti, M.A., “Prototype of Web-GIS for UAST-based Railroad Fatigue Management”, Paper No. 03-4373, 82nd Annual TRB Meeting, January 2003.
9. Nishiyama, T., Bhatti, M.A., and Lee, H., “Development of 3-D Finite Element Model to Quantify Bond Level of Thin Concrete Overlay”, Paper No. 03-2985, 82nd Annual TRB Meeting, January 2003.
10. Nishiyama, T., Bhatti, M.A., and Lee, H., “Finite Element Simulation of Different Bond Levels in Pavements with Thin and Ultra Thin Whitetopping” Third International Symposium on Maintenance and Rehabilitation of Pavements and Technological Control, Guimaraes, Portugal, July 7 – 10, 2003.
11. Obadat, M., Lee, H., and Bhatti, M. A., Predicting Fatigue Life of Rails Using Measured and 3D Finite Element Simulated Strain Histories, Paper # 02-3876, Transportation Research Board, 81st Annual Meeting, January 13-17, 2002, Washington, DC.
12. Bhatti, M.A. and Stoner, J.W., Jointed Concrete Pavement Finite Element Model Development Using The Fwd Data, Paper 01-148, Second International

Symposium on Maintenance and Rehabilitation of Pavements and Technological Control, July 29 – August 1, 2001, Auburn, Alabama.

13. Buranadham, S., Aquilino, S., Stanford, C.M., and Bhatti, M.A., “Cement Stresses in an Anterior Tooth Restored with Cast-Dowel Core”, submitted for the symposium of International and American Association for Dental Research, IADR 2000.
14. Chiu, L.B., Bhatti, M.A., and Chen, J.S., “A Four Field Variational Formulation for Incompressible Problems in Hyperelasticity”, Proceedings of the Pan American Congress of Applied Mechanics, January 1999.
15. Bhatti, M.A., “Finite Element Modeling of Jointed Concrete Pavements Using ANSYS and PaveSim”, Proceedings of First National Symposium on 3D Finite Element Modeling for Pavement Analysis and Design, November 1998.
16. Bhatti, M.A. and Stoner, J.W., “Rigid Concrete Pavement Response to Alternative Heavy Vehicle Configurations”, Paper No. 971220, TRB Annual Meeting, Washington, DC, January, 1997.
17. Lin, Baizhong, and Bhatti, M.A., , “Fatigue Threshold Based on Cyclic Friction Energy Dissipation”, Proceedings of the Fifth Pan American Congress of Applied Mechanics, San Juan, Puerto Rico, January 1997.
18. Krishnaswami, P. and Bhatti, M.A., “Symbolic Computing in Optimal Design of Dynamic Systems”, Paper No. 85-DET-76, (6 pages), ASME 11th Design Automation Conference, Cincinnati, Ohio, September 1985.
19. Nagib, M. E., Breckner, P., Farsakh, L., and Bhatti, M. A., “RCCR-Wall: Reinforced Concrete Cantilever Retaining Wall”, Design of Structural Concrete, Computer Program Series/Com-2(85), ACI 1985.
20. Krishnaswami, P. and Bhatti, M.A., “A General Approach for Design Sensitivity Analysis of Constrained Dynamic Systems”, Paper 184-DET-132 (7 pages), ASME 1984 Design Engineering Technical Conference, October 7-10, 1984, Cambridge, MA.
21. Balling, R., Bhatti, M. A., Ciampi, V. and Pister, K. S., “Interactive Optimal Design of Dynamically Loaded Structures Using the OPTNSR Software System”, Proceedings, International Symposium on Optimum Structural Design, Tucson, Arizona, Oct. 1981.
22. Bhatti, M. A., Ciampi, V., Pister, K. S. and Polak, E., “An Interactive Software System for Optimal Design of Statically and Dynamically Loaded Structures with Nonlinear Response”, Proceedings, International Symposium on Optimum Structural Design, Tucson, Arizona, Oct. 1981.
23. Bhatti, M. A., Pister, K. S. and Polak, E., “Interactive Optimal Design of Dynamically Loaded Structures,” Preprint No. 80-635, ASCE National Convention, Hollywood, FL, October 1980.

24. Bhatti, M. A., Pister, K. S., “An Implementable Algorithm for Computer-Aided Design Problems With or Without Dynamic Constraints”, Advances in Computer Technology Conference, ASME, San Francisco, CA, August, 1980, pp. 392-400.

Conference proceedings (with moderate review)

1. Bhatti, M.A., Structural Design Optimization using the MS Excel Solver and Computer Algebra Systems, Paper 83, Proceedings ASCE Structures Congress, April 20–24, 2005, New York, New York.
2. Nishiyama, T., Bhatti, M.A., and Lee, H., “Finite Element Characterization of Bond-Levels and Performance of Pavements with Overlays”, pp. 141-150, Proceedings of the International Conference On Highway Pavement Data, Anaysis and Mechanistic Design Applications, Columbus, Ohio, September 7-10, 2003.
3. Bhatti, M.A., “Teaching Optimum Design Using Mathematica”, Proceedings of the 59 Annual ASEE North Midwest Conference, Iowa City, IA, October 1997.
4. Bhatti, M.A., “Use Of Symbolic Computer Algebra System In Teaching Finite Element Analysis”, Proceedings of the 58 Annual ASEE North Midwest Conference, Fargo, ND, October 1996.
5. Bhatti, M.A., Molinas-Vega, I. and Stoner, J. W., “Nonlinear Finite Element Based Model for Simulation of Performance of Concrete Pavements”, 1996 Sesisesquicentennial Transportation Conference Proceedings, pp. 97-100, May 1996.
6. Teng, S., Bhatti, M. A., and Ashton, W.D., “Investigation of a Cracked Concrete Arch Dam using the Finite Element Method”, pp. 201-208, Proceedings of the 2nd International Conference on the Concrete Future, The National Ready-Mixed Concrete Association of Malaysia, Kuala Lumpur, Malaysia, February 9-11, 1993, pp. 201-208.
7. Bhatti, M. Asghar, “Computer Aided Load and Resistance Factor Design of Steel Beams”, pp. 37-41, Proceedings of the Sixth National Conference on University Programs in Computer Aided Engineering Design, and Manufacturing, June 27-29, 1988.
8. Bhatti, M.A. and Nam, D.H., “Optimal Design of Eccentrically Braced Frames”, Proceedings National Conference on Earthquake Engineering, The Institution of Engineers, Pakistan, April 1986.
9. Al-Gahtani, A. and Bhatti, M.A., “Software for Optimum Design of Highway Bridge Beams”, Proceedings ASCE Fourth Conference on Computing in Civil Engineering, Boston, MA, October 27-29, 1986.
10. Hussain, A. and Bhatti, M.A., “Optimal Design of Continuous Parabolically Varying Depth Prestressed Concrete Girders”, Ninth Conference on Electronic Computation, Birmingham, Alabama, February 23-26, 1986.
11. Bhatti, M.A., “Computer Aided Design at The University of Iowa”, Proceedings National Computer Graphics Association Conference and Exposition, April 14-18, 1985, Dallas, Vol. III, pp. 307-316.

Technical reports

1. Constantinescu, G., Bhatti, M. A., and Phares, B. Effect of Wind Induced Unsteady Vortex Shedding, Diurnal Temperature Changes, and Transit Conditions on Truss Structures Supporting Large Highway Signs, TR-687: Final Report Iowa Department of Transportation, March 2018.
2. Constantinescu, G., Bhatti, M. A., Wipf, T., and Phares, B. Wind loads on dynamic message cabinets and behavior of supporting trusses, TR 612: Final Report Iowa Department of Transportation, May 2013.
3. Constantinescu, G., Bhatti, M. A., and Tokyay, T. Improved method for determining wind loads on highway sign and traffic signal structures, Final Report TR-559, Iowa Highway Research Board, Iowa Department of Transportation, Ames, IA, 2007
4. Bhatti, M. A., Baizhong Lin, Paul Taylor, and Leslie Hart, "PaveSim: Simulation of Pavement Damage due to Heavy Vehicles", Public Policy Center Report, 1997.
5. Stoner, J.W. and M. A. Bhatti, "Estimating Pavement Damage from Longer and Heavier Combination Vehicles", Midwest Transportation Center Report, June 1994.
6. Stoner, J.W., M. A. Bhatti, and N. S. J. Foster, "The Economic, Operating, and Infrastructure Impacts of Concentrated Truck Transport Service and Designated Commercial Highway Networks", Midwest Transportation Center Report, 1992.
7. Stoner, J.W., Bhatti, M.A., Kim, S.S., Bernard, J.E., Molinas-Vega, I., C. Q. Febres, Amhoff, B., Koo, J.K., S.W. Stearns, and N.S.J. Foster, "Dynamic Simulation Methods for Evaluating Vehicle Configuration and Roadway Design", Midwest Transportation Center Report, 1991.
8. Stoner, J.W., Bhatti, M.A., Kim, S.S., Koo, J.K., Molinas-Vega, I., Amhoff, B., "Dynamic Simulation Methods for Evaluating Motor Vehicles and Roadway Design and Resolving Policy Issues", Midwest Transportation Center Report, 1990.
9. Sreekantamurthy, T., Rajan, S.D., Reddy, C.P.D., Staley, D.T., Bhatti, M.A. and Arora, J.S., "Database Management in Design Optimization", Technical Report No. CAD-SS-83-17, Division of Materials Engineering, University of Iowa, Iowa City, Iowa.
10. Rajan, S. D. and Bhatti, M. A., "OPTECH User's Manual", Technical Report CAD SS-82.12, Computer Aided Engineering Laboratory, University of Iowa, Iowa City, IA 52242.
11. Yungtun, L. and Bhatti, M. A., "Interactive Use of ANSYS for Thermal Analysis Problems", Technical Report CAD-SS-82.21, Computer Aided Engineering Laboratory, University of Iowa, Iowa City, IA 52242.

12. Yungtun, L. and Bhatti, M. A., "Interactive Use of ANSYS for Dynamic Analysis Problems", Technical Report CAD-SS-82.22, Computer Aided Engineering Laboratory, University of Iowa, Iowa City, IA 52242.
13. Yungtun, L. and Bhatti, M. A., "Interactive Use of ANSYS for Static Analysis Problems", Technical Report, CAD-SS-82.20, Computer Aided Engineering Laboratory, University of Iowa, Iowa City, IA 52242.
14. Bhatti, M. A. "Welcome to GIFTS (A Graphics Oriented Interactive Finite Element Time-Sharing System)", Technical Report CAD-SS-82.19, Computer Aided Engineering Laboratory, University of Iowa, Iowa City, IA 52242.
15. Liu, J. J. and Bhatti, M. A., "ITABS: A Graphics Oriented Interactive Program for Three Dimensional Analysis of Building Systems", Technical Report CAD-SS-82.29, Computer Aided Engineering Laboratory, University of Iowa, Iowa City, IA 52242.
16. Bhatti, M. A. and Haririan, M., "CANON: Computer Aided Finite Element Analysis of Nonlinear Systems", Technical Report CAD-SS-82.26, Computer Aided Engineering Laboratory, University of Iowa, Iowa City, IA 52242.
17. Arabi-Katibi, M. N. and Bhatti, M. A., "COLAPS: A Graphics-Oriented Interactive Program for Elastic-Plastic Analysis of Planar Frame Structures", Technical Report No. CAD-SS-82.8, Computer Aided Engineering Laboratory, University of Iowa, Iowa City, IA, 52242, February 1982.
18. Rajan, S. D. and Bhatti, M. A. "SADDLE: A Computer-Aided Structural Analysis and Dynamic Design Language", Technical Report CAD-SS-82.13, Computer Aided Engineering Laboratory, University of Iowa, Iowa City, IA 52242.
19. Bhatti, M. A., Wu, E. B. and Lim, O.K., "ICAL - Interactive Computer Analysis Language", Technical Report No. CAD-SS-81-3, Computer Aided Engineering Laboratory, University of Iowa, Iowa City, IA, September 1981.
20. Bhatti, M. A., Ciampi, V., Pister, K. S. and Polak, E., "OPTNSR - An Interactive Software System for Optimal Design of Statically and Dynamically Loaded Structures with Nonlinear Response, Report No. UCB/EERC-81/02, Earthquake Engineering Research Center, University of California, Berkeley, CA, January 1981.
21. Bhatti, M. A., Polak, E. and Pister, K. S., "OPTDYN - A General Purpose Optimization Program for Problems With or Without Dynamic Constraints", UCB/EERC - 79/16, July 1979, Earthquake Engineering Research Center, University of California, Berkeley, CA.
22. Bhatti, M. A., "Optimal Design of Localized Nonlinear Systems with Dual Performance Criteria Under Earthquake Excitations," UCB/EERC - 79/15, July 1979, Earthquake Engineering Research Center, University of California, Berkeley, CA.
23. Bhatti, M. A., Pister, K. S. and Polak, E. "Optimal Design of an Earthquake Isolation System", UCB/EERC - 78/22, October 1978, Earthquake Engineering Research Center, University of California, Berkeley, CA.

Invited Lectures and Conference presentations

1. Invited Keynote Speaker, International Conference on Earthquake Engineering and Seismology (ICEES), Islamabad, Pakistan, April 24-26, 2011.
2. Presentaion, ASCE Structures Congress, New York, April 2005.
3. Presentaion, Third International Symposium on Maintenance and Rehabilitation of Pavements and Technological Control, Guimaraes, Portugal., July 2003
4. Presentaion, Annual Conference of the American Society of Engineering Education, Nashville, TN, June 2003
5. Presentaion, 82nd Annual Meeting of the Transportation Reasearch Board, National Academy of Sciences, Washington DC, January 2003
6. Presentaion, 81st Annual Meeting of the Transportation Reasearch Board, National Academy of Sciences, Washington DC, January 2002
7. Invited speaker, Optimization Using Genetic Algorithm, 2001 Mathematica Developers Conference, Champaign, IL., October 2001
8. Session Moderator, Session 7B, Second International Symposium on Maintenance and Rehabilitation of Pavements and Technological Control, July 29 – August 1, 2001, Auburn, Alabama, July 2001
9. Session Chairman, Vibrations conference, King Fahd University of Petroleum & Minerals, Dhahran, Saudi Arabia, April 2000
10. Invited lecturer, Transportation safety: Simulation tools and applications, Naif Academy of Security Sciences, Riyadh, Saudi Arabia., October 1999
11. Invited speaker, Constrained Optimization Using Penalty Functions, 1999 Mathematica Developers Conference, Champaign, IL., October 1999
12. Session Co-Chairman, Session W3D, Fracture, 1999 ASME Mechanics and Materials Conference, Virginia Tech, Blacksburg, VA., June 1999
13. Session Co-Chairman, Session W2D, Fracture/Fatigue, 1999 ASME Mechanics and Materials Conference, Virginia Tech, Blacksburg, VA., June 1999
14. Presentation, A Mathematica Based Environment for Analysis and Optimum Design of Composite Structures, OPTI99, Orlando, Florida., March 1999
15. Presentation, A Four Field Variational Formulation for Incompressible Problems in Hyperelasticity, Sixth Pan American Congress of Applied Mechanics, Rio de Janeiro, Brazil., January 1999
16. Presentation, Nonlinear Analysis of Jointed Concrete Pavements, 78th Annual TRB Meeting, Washington, DC., January 1999
17. Invited speaker/organizer, Finite Element Modeling of Jointed Concrete Pavements Using ANSYS and PaveSim, First National Symposium on 3D Finite Element Modeling for Pavement Analysis and Design, Charleston, WV., November 1998

18. Invited speaker, Analysis and Optimum Design of Composite Structures Using a Symbolic Computational Environment, NATO Advanced Study Institute on Mechanics of Composite Materials and Structures, Troia, Portugal., July 1998
19. Invited speaker, Teaching Optimum Design Using Mathematica, 10th Anniversary Mathematica Developers Conference, Chicago, IL., June 1998
20. Presentation, 77th Annual TRB Meeting, Washington, DC., January 1998
21. Presentation , 59th Annual ASEE North Midwest Meeting, Iowa City, IA., October 1997
22. Presentation, ASCE Conference on Infrastructure Condition Assessment, Boston, MA., August 1997
23. Presentation, Fifth Pan American Congress of Applied Mechanics, San Juan, Puerto Rico., January 1997
24. Presentation, 76th Annual TRB Meeting, Washington, DC., January 1997
25. Presentation , 58th Annual ASEE North Midwest Meeting, Fargo, ND., October 1996
26. Presentation, First International Conference on Computing and Information Technology for Architecture, Engineering & Construction, Singapore., May 1996
27. Invited lecture, Nanyang Technological University, Department of Civil Engineering, Singapore., May 1996
28. Presentation, 1996 TRB Sesquicentennial Transportation Conference Ames, Iowa., May 1996
29. Presentation, ACI Annual Spring Convention, Denver, CO., March 1996
30. Presentation, ACI Fall Convention, Montreal, Canada., November 1995
31. Invited panelist, Mathematica in Engineering Mechanics, Mathematica Developers Conference, Wolfram Research, Champaign, IL., September 1995
32. Presentation, Fourth International Conference on Computer Aided Optimum Design of Structures, Miami, FL, September 1995
33. Presentation, 2nd International Conference on the Concrete Future, Kuala Lumpur, Malaysia., February 1993
34. Presentation, ACI Spring Convention, Boston, Mass., March 1991
35. Presentation, Sixth National Conference on University Programs in Computer Aided Engineering Design, and Manufacturing, Atlanta, GA., June 1988
36. Presentation, ASCE Fourth Conference on Computing in Civil Engineering, Boston, MA., October 1986
37. Invited lecture, National Conference on Earthquake Engineering, The Institution of Engineers, Pakistan., April 1986
38. Presentation, ASCE Ninth Conference on Electronic Computation, Birmingham, Alabama., February 1986

39. Presentation, ASME 11th Design Automation Conference, Cincinnati, Ohio., September 1985
40. Presentation, National Computer Graphics Association Conference and Exposition, Dallas, TX., April 1985
41. Presentations, International Symposium on Optimum Structural Design, Tucson, Arizona., October 1981
42. Presentation, ASCE National Convention, Hollywood, Florida., October 1980
43. Presentation , ASME International Computer Technology Conference, San Francisco, CA., August 1980
44. Presentations, NATO Advanced Study Institute on Optimization of Distributed Parameter Structures, Iowa City, IA., Summer 1980.

MS Theses Supervised

1. Ryan Vignes, Modeling Muscle Fatigue in Digital Human, 2004.
2. Alkan Bektur, Optimization of Base Isolated Steel Frame Structures, 2003.
3. Taizo Nishiyama, 3D Finite Element Modeling of Rail-Roads (Co-Chairman with Hosin David Lee), 2002.
4. Paul C. Taylor, PaveSim—Dynamic Simulation of Jointed-Concrete Pavement, 1996.
5. Jeff Barlow, Improved Pumping Model for Rigid Pavements (Co-advisor with J.W. Stoner), 1994.
6. James D. Hingtgen, Effect of Connection Stiffness and Connection Plasticity on the Behavior of Unbraced Steel Frames Using 2nd Order Analysis, 1992.
7. Carlos Quintero-Febres, Parametric Modeling of Elastic Earthquake Response Spectra, 1992.
8. Dilip V. Shah, Anatomy of a Typical CAD/CAM/CAE System, 1988.
9. Keonyeong Jeong, Optimal Proportions of Highway Bridge Girders, 1987.
10. Dayananda Bangalore, Development of a 3-Dimensional Model for Finite Element Analysis of Bone Remodeling Around an Implant, 1985.
11. Do Hyun Nam, Optimal Design of Eccentrically Braced Frames Under Seismic Loads, 1985.
12. Jieh-Ell Twu, Analysis and Design of High- Rise Buildings Using the Finite Strip Method, 1985.
13. Tanweer Mozaffar, ST-JOINT: A Computer Graphics Oriented Interactive Program for the Design of Connections for Steel Framed Structures, 1985.
14. Amjad Hussain, Optimal Design of Continuous Prestressed Concrete Variable Depth Girders, 1985
15. H. E.F. Cedillo, An Energy-Based Adaptive Finite Element Analysis of Two-Dimensional Elasticity Problems, 1984.
16. O. Ramirez, Reinforced Concrete Design Aids Based on ACI 318-83 Building Code, 1984.
17. S.M. Chen, Three Dimensional Analysis and Design of High-Rise Buildings, 1984.
18. Nasir Raza, Preliminary Design of Cable Stayed Bridges Using Optimization Techniques, 1983.
19. Donald Staley, IDEAS: Interactive Design & Analysis of Steel Frames, 1983.
20. J.J. Liu, ITAB-Interactive Three Dimensional Analysis of Building Systems, 1983.

21. M.N. Arabi-Katibi, COLAPS-A Graphics Oriented Computer Program for Elastic-Plastic Analysis of Planar Frames, 1982

Ph.D. Theses Supervised

1. Mehmet Serdaroglu, Nonlinear Analysis of Pile Driving and Ground Vibrations in Saturated Cohesive Soils Using the Finite Element Method, 2010.
2. Sultan A. Sultan, Performance-Based Optimal Design of Semi-Rigid Connected Steel Frames under Seismic Loading, 2007.
3. Taizo Nishiyama, Evaluation of Pavements with Thin-Bonded Concrete Overlays Through Field Investigation and Finite Element Modeling (Co-Chair with Hosin David Lee), 2005.
4. Mohammad Obadat, Evaluation of MEMS-based Bi-Axial Strain Transducer and its Application (Co-Chair with Hosin David Lee), 2003.
5. Li-Ban Chiu, A Four-Field Variational Formulation For Bending-Incompressible Problems in Hyperelasticity, 1998.
6. Byung-Gon Sung, A Consistent Formulation for Treatment of Material Nonlinearity in Flexible Dynamics, 1997.
7. Baizhong Lin, A Friction Based Model for Metal Fatigue, 1996.
8. J.P.I. Molinas-Vega, Nonlinear Fatigue Damage Accumulation in Concrete and Its Application to Concrete Pavements, 1992.
9. Anan Almughrabi, Three Dimensional Finite Element Analysis of Reinforced Concrete Beams Under Pure Torsion, 1987.
10. H.E. Febres-Cedillo, Prediction of the Maximum Response of Structures Subjected to Random Earthquake Excitation, 1987.
11. M.M. Hadi, Optimal Design of Stochastic Structural and Mechanical Vibrating Systems, 1986.
12. A.S. Al-Gahtani, Optimum Design of Welded I-Beams Subjected to Highway Bridge Loads, 1986.
13. P. Krishnaswamy, Computer Aided Optimal Design of Constrained Dynamic Systems, 1983.
14. S.D. Rajan, SADDLE: A Computer-Aided Structural Analysis of Dynamic Design Language, 1983.