

**GUN JIN YUN**  
(Last Update on August 2010)

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**EDUCATION**

*Ph.D* - University of Illinois, Urbana-Champaign, *Civil & Environmental Engineering*,  
2002~2006.  
*MS* - Korea Advanced Institute of Science and Technology, *Civil Engineering*, 1994~1996.  
*BS* - Korea Advanced Institute of Science and Technology, *Civil Engineering*, 1991~1994.  
*Completed 4-year course of study in 3 years*

**PROFESSIONAL EXPERIENCE**

<i>Assistant Professor</i>	Dept. of Civil Engrg., The University of Akron, January 2008~Present
<i>Post-doctoral Researcher</i>	Dept. of Civil Engrg., Washington University, November 27, 2006~January 2008
<i>Graduate Research Assistant</i>	Dept. of Civil Engrg., Univ. Illinois U-C, Urbana, 2003~2006
<i>Associate Research Engineer</i>	Institute of Construction Technology, SamSung Corporation, 1998~2002
<i>Staff Structural Engineer</i>	Institute of Construction Technology, SamSung Corporation, 1996~1998

**HONORS/AWARDS**

Marquis Who's Who in America (2009)  
*JSPS fellowship*, Japan Society of the Promotion of Science (FY2007)  
*Conference Travel Grant Award*, Graduate College, University of Illinois U-C (2006)  
*Dissertation Completion Fellowship(Alternate)*, Graduate College, University of Illinois U-C  
(2005~2006)  
*Rotary Foundation's Ambassadorial Scholarship* (2002~2003)  
*Samsung President's Prize* (1998)  
*KAIST Tuition Scholarship* (1992~1993)

**PROFESSIONAL ACTIVITIES**

***Memberships on Editorial Boards***

- Associate Editor, KSCE Journal of Civil Engineering (SCIE), December 2009 ~ Present
- Member of Editorial Board of Earthquake Engineering Society of Korea May 2009 ~ Present

***Society Affiliations***

- American Society of Civil Engineers 2007~present
- Network for Earthquake Engineering Simulation (NEES), 2005~present

***Professional/Technical Committee Positions***

- Member ASCE Seismic Effects Committee 4/2008~present
- Member ASCE Emerging Analysis Methods in Earthquake Engineering Committee, 4/2008~present
- Member ASCE Dynamics Committee, 8/2008~present
- Member ASCE Advanced Materials and Structures Committee (June 2008~Present)

### ***Recent Collaborators***

*Collaborators and Co-Editors:* Saleeb, Atef (Univ of Akron), Caicedo, Juan (Univ. of South Carolina), Carletta, Joan (Univ. of Akron), Christenson, Richard (Univ. of Connecticut), Kim, Dong-Han (Kyung Hee Univ.), Kim, Joeng-Ho (Univ. of Connecticut), Nagayama, Tomonotri (Univ. of Tokyo), Pan, Ernian (Univ. of Akron), Qiao, Pizhong (Washington State Univ), Wieslaw Binienda (U of Akron)

*Graduate Advisor and Postdoctoral sponsor:* Shirley J. Dyke (Wash. Univ. Post-doc Advisor), and Jamshid Ghaboussi (UIUC, Ph.D Advisor)

### ***Sessions Chaired/Organized***

- Co-chaired a session titled “Computational Mechanics” held at the inaugural international conference of the engineering mechanics institute (EM08), Minneapolis, Minnesota, May 2008
- Co-chaired a session titled “Mechanics of Advanced Materials and Structures”, 2009 Joint ASCE-ASME-SES Conference on Mechanics and Materials, Blacksburg, VA, June 24~27, 2009
- Chaired a session titled “Novel Sensor Applications”, ANCRiSST 2009 Conference, Boston, July 30~31, 2009
- Chaired a session titled “Electromagnetic Sensors”, SPIE 2010 Conference, San Diego, March 7~11, 2010
- Co-chaired a session titled “Hybrid Simulation for Civil Engineering Application”, AIMM’10 Conference, Jeju, Korea, May 30 ~ June 3 2010

### ***Professional Development***

- Participated in “SPIE 2010 Conference”, San Diego, CA, March7 ~ 11, 2010
- Participated in “ANCRiSST 2009 Conference”, Boston, MA, July 30~31, 2009
- Participated in “2009 Joint ASME/ASCE/SES Conference on Mechanics and Materials”, Blacksburg, VA, June 24~27, 2009
- Participated in “Structures Congress 2009”, Austin, Texas, April 30~May 2, 2009
- Participated in “SPIE 2009 Conference”, San Diego, March 8~12, 2009
- Participated in ASME 2008 Conference on Smart Materials, Adaptive Structures & Intelligent System, Ellicott City, MD, October 28~30, 2008
- Participated in “Structures Congress 2008”, Vancouver, Canada, April 24~26 2008.
- Participated in “the Inaugural International Conference of the Engineering Mechanics Institute (EM08)”, Minneapolis, Minnesota, May 18~21, 2008
- Participated in “OpenFresco Workshop at *NEES@Berkeley*”, UC Berkeley, Berkeley, CA, Feb. 23, 2008
- Participated in “Hybrid Simulation Workshop at *NEES@Berkeley*”, UC Berkeley, Berkeley, CA, Feb. 21 - 22, 2008
- Participated in “RTMD Training Workshop, at *NEES@Lehigh*”, Lehigh University, Bethlehem, PA, November 12, 2007

- Participated in “6<sup>th</sup> International Workshop on Structural Health Monitoring”, Stanford University, Stanford, CA, USA, September 11 ~ 13, 2007
- Participated in “CHEF Developer Workshop”, University of Michigan, Ann Arbor, March, 2003
- Participated in a Field Mission Trip to Indonesia “Mid-America Earthquake Center – Field Mission”, Indonesia, July 3~9, 2006
- Participated in EKHS Retreat – Allerton Park, IL, October 22~23, 2005

### **Reviewing**

#### *Journals*

- Journal of Earthquake Engineering
- Engineering Structures
- Structural Control and Health Monitoring
- Journal of Performance of Constructed Facilities
- Journal of Sock and Vibration
- Journal of Aerospace Engineering
- Smart Structures and Systems
- Structural Health Monitoring-An International Journal
- Polymer Composites
- Engineering Optimization
- Computers and Concrete

#### *Conferences*

- 51<sup>st</sup> AIAA/ASME/ASCE/AHS/ASC Structures, Structural Dynamics and Materials Conference, Structures and Materials Division
- International Foundation Congress and Equipment Expo 2009

### **GRANTS AND CONTRACTS**

#### ***Funded Research***

1. National Science Foundation – REU SITE - PI  
*Collaborative Research: REU SITE: International REU program in Smart Structures*  
\$104,275.00, Award Period: 05/01/2009~04/30/2012
2. National Aeronautics and Space Administration (NASA) – PI  
*“Experimental Structural Assessment of Advanced Stirring Convertor Planar Spring Material for Long-term Durability”*, Phase I Subaward through Sunpower, \$110,000.00, Award Period: 10/01/2009~4/30/2010 with Dr. Wieslaw Binienda
3. National Aeronautics and Space Administration (NASA) – PI  
*“Giga-Cycle Fatigue Test of Spring Materials of ASC Displacer”*, Phase II from NASA GRC, \$98,000.00, Award Period: 9/08/2010~8/31/2011 with Dr. Wieslaw Binienda
4. Kyung Hee University and the Ministry of Land, Transportation and Maritime Affairs of the Korean Government  
*“High-tech Urban Development Program”*, \$10,000.00 (PI: Dr. Gun JinYun) Award Period: 04/30/2009~04/29/2009
5. Firestone Faculty Research Fellowship, College of Engineering, The University of Akron, September, 2008, \$10,000.00

### **STUDENTS ADVISED**

#### ***Graduate Research Assistants***

Shen Shang (Ph.D. Fall 2008~Present): Experimental-Computational Identification of Damage Evolution Laws of Brittle Materials

Soon-Gie Lee (Ph.D. Fall 2008~Present): Real-Time Monitoring System of Structural Damage and Finite Element Model Updating

Abdullah ABM (MS Fall 2009~Present): Development of A Closed-Loop Resonant Fatigue Testing Methodology and Experimental Fatigue Test of Aluminum Alloy

Kamil Nizamiev (M.S. 8/2009~Present): Stochastic Finite Element Model Updating

### ***Undergraduate Research Assistants***

Kenneth A. Ogorzalek (REU student, Summer 2007)

- *Finite element model updating using genetic algorithm and subset selection*

Matthew R. Hiatt (REU student, Summer 2010)

- *Finite element model updating of a PSC Box Girder Bridge Using Ambient Vibration Test*

Anthony Wheeler (REU student, Summer 2010)

- *Structural Control of a Three Story Building Using Self-Powered and Self-Sensing MR Fluid Damper System Teaching Activities*

### ***Courses Taught***

- Dynamics of Structures (Grad), UAkron (Fall 2010)
- Theory of Structures (Under), UAkron (Fall 2010)
- Statics (Under, Evaluation: **3.408/5.0**, Class:52), UAkron (Spring 2010)
- Adv. Mech of Materials (Grad, Evaluation: **3.91/5.0**, Class:13), UAkron (Spring 2010)
- Theory of Structures (Under, Evaluation: **4.072/5.0**, Class: 54), UAkron (Fall 2009)
- Finite Element Analysis I (Grad, Evaluation: **4.461/5.0**, Class: 17), UAkron (Fall 2009)
- Statics (Under, Evaluation: **3.36/4.0**, Class:18), UAkron (Spring 2009)
- Dynamics of Structures (Grad, Evaluation: **3.6/4.0**, Class: 8), UAkron (Spring 2009)
- Theory of Structures (Under, Evaluation: **2.78/4.0**, Class: 45), UAkron (Fall 2008)
- Adv. Mech of Materials (Grad, Evaluation: **2.25/4.0**, Class: 4), UAkron (Spring 2008)
- Engineering Mathematics, Kyung-Gi University, South Korea (Spring 2002)

### ***Short Courses***

- Developed and taught a short course on fundamentals of genetic algorithm (Summer 2007)
- Developed and taught courses on FE analysis of reinforced concrete structures using DIANA (Spring 2007)

## **OTHER PROFESSIONAL EXPERIENCE**

***Post-doctoral Researcher***-Washington University in St. Louis (November 2006~Present)

- Conducted research on non-linear model updating of reinforced concrete structures (supported by NSF Grant No.CMMI-0625640, \$307,545.00)
- Developed a total strain-based hysteretic model for 2D planar reinforced concrete structures
- Developed a new structural damage detection method based on subset selection using sensitivities of residual force vectors
- Developed a new genetic algorithm approach to Modeling to Generate Alternatives for model updating of civil structures
- Co-authored NSF PIRE proposal

***Graduate Research Assistant***-University of Illinois Urbana-Champaign, Urbana, IL

(January 2003~November 2006)

- Multi-Axial full-scale sub-structuring testing & simulation facility (Supported by NSF Grant No.CMMI-0217325, \$3,232,011.00 )
- Developed Integrated Computational and Experimental Simulation (ICES) software framework and NEES-ABAQUS API (supported by Mid America Earthquake Center)
- Developed self-learning simulation method for inverse non-linear modeling of cyclic behavior of connections
- Co-authored NIH research proposal on bio-medical imaging

**Associate Research Engineer**-Samsung Corporation (January 1998 ~ March 2002)

- Researched on Design and Analyses of Cable Stayed Bridge and Suspension Bridge (Supported by Institute of Construction Technology)
- Conducted construction stage analysis of an extra-dosed prestressed concrete box girder bridge, Turnkey Project
- Conducted preliminary and detail design of a steel cable-stayed bridge and an earth-anchored suspension bridge with center span 1200 m
- Conducted finite element analysis for design of a suspension bridge and a cable-stayed bridge
- Developed a new method for initial shape determination of cable-stayed bridges
- Developed a computer program (3DCAPini) for cable-stayed bridges

**Staff Structural Engineer**-YoungJong Grand Bridge Site, Inchon, Korea and Osaka, Japan, Samsung Corporation (February 1996 ~ December 1997)

- Designed details of superstructures and tower bases of youngjong grand bridge (self-anchored suspension bridge)
- Managed sub-contract on detail finite element analysis of tower
- Improved design of tower base system
- Edited structural design reports

## PUBLICATIONS

### *Journal Publications*

1. **G.J. Yun** and W.S. Lee, "Non-linear Static Analysis and Initial Shape Determination of Cable Stayed Bridges", *Journal of Korea Society of Civil Engineers*, Vol. 21 No. 1-A: pp 165~177, 2001.
2. J. Ghaboussi, **G.J. Yun** and Y. Hashash, "A Novel Predictor-Corrector Algorithm for Substructured Pseudo-dynamic Testing" *Earthquake Engineering and Structural Dynamics*, Vol. 35 No. 4: pp 453-476, 2006.
3. **G.J. Yun**, J. Ghaboussi and A.S. Elnashai, "Development of Neural Network based Hysteretic Model for Steel Beam-Column Connection through Self-learning Simulation" *Journal of Earthquake Engineering*, Vol. 11 No. 3: pp453~467, 2007.
4. **G.J. Yun**, J. Ghaboussi and A.S. Elnashai, "A New Neural Network-based Model for Hysteretic Behavior of Materials", *International Journal of Numerical Methods in Engineering*, Vol. 73, pp 447~469, 2008.
5. **G.J. Yun**, J. Ghaboussi and A.S. Elnashai, "A Design-Variable-based Hysteretic Model for Beam-Column Connections", *Earthquake Engineering and Structural Dynamics*, Vol. 37, pp535~555, 2008
6. **G.J. Yun**, J. Ghaboussi, and A.S. Elnashai, "Self-learning Simulation Method for Inverse Non-linear Modeling of Cyclic Behavior of Connections", *Computer Methods in Applied Mechanics and Engineering*, Vol. 197, Issue 33~40, pp 2836~2857, 2008
7. **G.J. Yun**, T.G. Harmon, S.J. Dyke and M. So, "A Total Strain-based Hysteretic Material Model for Reinforced Concrete Structures: Theory and Verifications", *Computers and*

*Concrete* Vol. 5(3), June 2008

8. **G.J. Yun**, K.A. Ogorzalek, S.J. Dyke and W. Song, "A Two-Stage Damage Detection Approach based on Subset Selection of Damage Parameters and Genetic Algorithms", *Smart Structures and Systems* Vol. 5(1), 2008, pp 1~21
9. W. Song, So, M., S.J. Dyke, T.G. Harmon, **G.J. Yun**, "Nonlinear RC Structure Model Updating Using Ambient Vibration Data", *ACI Special Publication, SP-252, Health Monitoring Systems & Sensors for Assessing Concrete*, 2008
10. W. Song, S.J. Dyke and **G.J. Yun**, "Improved Damage Localization and Quantification using Subset Selection", *Journal of Engineering Mechanics* Vol. 135(6), Pages:548~560, 2009
11. M. So, T.G. Harmon, **G.J. Yun** and S.J. Dyke, "Inclusion of Smeared Cyclic Bond-Slip Behavior in 2D Membrane Elements", *ACI Structural Journal* Vol. 106(4), Pages:466~475, 2009
12. **G.J. Yun**, K.A. Ogorzalek, S.J. Dyke and W. Song, "A Parameter Subset Selection Method using Residual Force Vector for Multiple Damage Detection", *Structural Control and Health Monitoring* Vol. 17(1), pp 48~67, 2010
13. S. Shang, **G.J. Yun**, and P. Qiao, "Delamination Identification of Laminated Composite Plates Using Continuum Damage Mechanics Model and Subset Selection Techniques", *Smart Materials and Structures*, Vol 19(5), 2010
14. J. Caicedo, **G.J. Yun**, "A Novel Evolutionary Algorithm for Identifying Multiple Alternative Solutions in Model Updating", *Structural Health Monitoring-An International Journal* (Accepted) 2010
15. A.H. Gandomi, A.H. Alavi, **G.J. Yun**, "Formulation of Uplift Suction Caissons Using Multi Expression Programming", *KSCE Journal of Civil Engineering* (Accepted) 2010
16. M. So, Y.J. Kim, **G.J. Yun**, T.G. Harmon, S.J. Dyke, "Cyclic Shear-Friction Constitutive Model for FEA of R/C Membrane", *ACI Structural Journal* (Accepted) 2010
17. **G.J. Yun**, and S. Shang, "A Self-Optimizing Inverse Analysis Method for Identification of Elasto-Plastic Constitutive Parameters from Global Boundary Response", *International Journal of Plasticity* (Accepted) 2010
18. **G.J. Yun**, "An Integrated Structural Damage Detection and Quantification Method under Ambient Vibration Environments", *Journal of Engineering Mechanics* (Revised and Under Review) 2010
19. S.G. Lee, **G.J. Yun**, J. Carletta, and T. Nagayama, "Decentralized Damage Identification Using Wavelet Signal Analysis Embedded on Wireless Smart Sensors", *Engineering Structures* (Revised and Under Review) 2010
20. **G.J. Yun**, A.T. Saleeb, S. Shang, W. Binienda and C. Menzemer. "Improved Inverse Material Characterization Using Self-Learning Simulation", *Journal of Aerospace Engineering* (Revised and Under Review) 2010
21. S.B. Nam, **G.J. Yun**, J. Carletta, D.H. Kim and W. Binienda,"A Novel Non-contact Electromagnetic Field Based Sensor for Vibration Monitoring", *Smart Materials and Structures* (Under Review) 2010
22. **G.J. Yun**, S.G. Lee and S. Shang, "Improved Mode Accuracy Indicator for Eigensystem Realization Analysis (ERA) Technique", *KSCE Journal of Civil Engineering* (Under Review) 2010
23. S. Shang, **G.J. Yun**, S. Kunchum, and J. Carletta, " A Novel FEA-free Energy-Based Inverse Characterization of Constitutive Parameters Using Full-Field Displacements", In Preparation for *Structural Engineering and Mechanics-An International Journal* 2010
24. S. G. Lee, S. Shang and **G.J. Yun**, "A Benchmark Problem for Finite Element Model Updating", In Preparation for *Smart Structures and Systems* 2010

### **Conference Publications**

1. **G.J. Yun**, W.S. Lee, J.S. Lee and S.C. Kim, "Constructional Stage Analysis of Extra-dosed Prestressed Concrete Box Girder Bridges", *Proceedings of Korean Concrete Institute*, Vol. 13 No. 2, November, 2001.
2. Y.M.A Hashash, Ghaboussi J., **Yun G.J.** and Elnashai A.S., "Development of software framework for MUST-SIM facilities: Integrated Computational and Experimental Simulation", *13th World Conference on earthquake engineering*, Vancouver, BC Canada, 2004.
3. **G.J. Yun**, J. Ghaboussi and A.S. Elnashai, "Neural Network-based Inelastic Hysteretic Model", *The first European Conference on Earthquake Engineering and Seismology*, Geneva, Switzerland, Sept. 3-8, 2006.
4. **G.J. Yun**, J. Ghaboussi and A.S. Elnashai, "Development of Neural Network-based Connection Models through Structural Testing", *The fourth International Conference on Earthquake Engineering*, Taipei, Taiwan, Oct., 2006.
5. A.S. Elnashai, S.J. Kim and **G.J. Yun** "Post-Earthquake Damage Inspection and Lessons from May 27 2006 Earthquake in Central Java, Indonesia", *ANCER Meeting*, 2007.
6. **G.J. Yun**, J. Ghaboussi and A.S. Elnashai, "A New Hysteretic Connection Model: from Inverse Modeling Problem to Inelastic Dynamic Analysis", *ECCOMAS Thematic Conference on Computational Methods in Structural Dynamics and Earthquake Engineering*, Rethymno, Crete, Greece, June 13-16, 2007.
7. Wei Song, Shirley J. Dyke, **Gun Jin Yun** and Thomas G. Harmon, "Trust-region optimization based model updating with subset selection and damage functions for SHM", *the Smart Structures and Smart Materials Technology Conference* in Chongqing and Nanjing, China May 22-27, 2007
8. Wei Song, Shirley J. Dyke and **Gun Jin Yun**, "FE Model Updating for Structural Damage Localization and Quantification using Subset Selection", *Structural Health Monitoring Conference*, Stanford, September, 2007
9. **G.J. Yun**, K.A. Ogorzalek, S.J. Dyke and W. Song, "A Structural Damage Detection Method Based On Subset Selection and Evolutionary Computation", *2008 Structures Congress*, April 24~26, Vancouver, Canada
10. **G.J. Yun**, T.G. Harmon, S.J. Dyke and M. So, "A Total Strain Based Hysteretic Material Model for 2D Planar Reinforced Concrete Structures", *2008 Structures Congress*, April 24~26, Vancouver, Canada
11. **G.J. Yun**, J. Ghaboussi, and Y.M.A. Hashash, "A Predictor-Corrector Algorithm for Multi-site Hybrid Simulation", *2008 Structures Congress*, April 24~26, Vancouver, Canada
12. Migeum So, Thomas G. Harmon, **Gun Jin Yun** and Shirley J. Dyke, "Reinforced Concrete Tension Stiffening Behavior for Non-linear Model Updating", *Research in Progress, ACI Fall 2007 Convention*, October 15, 2007
13. Migeum So, Thomas G. Harmon, **Gun Jin Yun** and Shirley J. Dyke, "Inclusion of Bond-Slip Behavior in 2D Total-Strain Based Reinforced Concrete Models for Non-linear Model Updating", *14th World Conference on Earthquake Engineering*, Beijing China, October 12~17 2008
14. **G.J. Yun**, "A finite element based inverse analysis method for elastography using parallelized evolutionary computation", *Inaugural International Conference of the Engineering Mechanics Institute (EM08)*, Minneapolis, Minnesota, May 18~21, 2008
15. M. So, T. Harmon, S. Dyke, **G.J. Yun**, "Bond-Slip and Shear-Friction Behavior of Reinforced Concrete Membrane Elements", *Inaugural International Conference of the Engineering Mechanics (EM08)*, Minneapolis, Minnesota, May 2008
16. **G.J. Yun**, "Modal Identification and Damage Detection for Structural Health Monitoring Under Ambient Vibration Environment", *2009 Structures Congress*, Austin, Texas, April

30~May 2, 2009

17. **G.J. Yun**, S. Shang, P. Qiao, “Fast Inverse Identification of Delamination of E-glass/Epoxy Laminate Composite Panels”, SPIE, Smart Structures/NDE, San Diego, CA March 2009
18. **G.J. Yun**, S.G. Lee, J. Carletta, T. Nagayama “Wavelet Entropy based Damage Identification using Wireless Smart Sensors”, SPIE, Smart Structures/NDE, San Diego, CA March 2009
19. **G.J. Yun**, A.T. Saleeb, “An Inverse Material Characterization Method for Lead Rubber Bearing Under Non-Uniform Cyclic Stress States. in *The 2009 Joint ASCE-ASME-SES Conference on Mechanics and Materials*. 2009. Blacksburg, VA
20. **G.J. Yun**, S.B. Nam, J. Carletta, W. Binienda and D.H. Kim, “Vibration-Based Crack Detection of Conductive Beam Structures Using A Non-contact Inductive Vibration Sensor”, ANCRiSST 2009 Conference, Boston, MA, July 30~31, 2009
21. S. Shang, **G.J. Yun**, S.G. Lee and J. Caicedo and S. Narasimhan, “Development of a Benchmark Laboratory Structure for Finite Element Model Updating”, The 5<sup>th</sup> International Conference on Bridge Maintenance, Safety and Management, 2010
22. **G.J. Yun**, S. Shang, S. Kunchum, J. Carletta, and S.B. Nam, “ A Low-Cost Digital Image Correlation Based Constitutive Sensor”, Smart Structures/NDE SPIE 2010 Conf, San Diego, CA
23. J. Caicedo, **G.J. Yun** and R. Christenson, “International REU Program in Smart Structures”, NSF Engineering Awardees Conference, Reston, Virginia, January 31 ~ February 2, 2010
24. S. Shang and **G.J. Yun**, “Self-Optimizing Inverse Method for Material Parameter Identification from Hybrid Testing:Using J2 Plasticity Model”, First International Conference on Advanced in Interaction & Multiscale Mechanics (AIMM’10), 2010

### ***Books and Reports***

1. Amr S. Elnashai, Sung Jig Kim, **Gun Jin Yun**, Djoni Sidarta, “The Yogyakarta Earthquake of May 27, 2006”, *Mid-America Earthquake Center*, CD-Release 07-02
2. **Gun Jin Yun**, Jamshid Ghaboussi, Amr S. Elnashai, “Modeling of Hysteretic Behavior of Beam-Column Connections based on Self-learning Simulation”, *Mid-America Earthquake Center*, CD-Release 07-13

### **INVITED SEMINARS AND PLENARY/KEYNOTE LECTURES**

#### ***Invited Seminars***

1. Integration of Computational and Experimental Research in Structural Engineering, University of South Carolina, SC, August 24, 2007
2. Modeling of Hysteretic Behavior of Beam-Column Connections based on Self-learning Simulation, Washington University in St. Louis, MO, September 29, 2006
3. Multi-site Hybrid Simulation and Self-learning Simulation for Inverse Nonlinear Modeling, University of Akron, OH, November 8, 2007
4. Multi-site Hybrid Simulation and Self-learning Simulation for Inverse Nonlinear Modeling, Washington University in St. Louis, MO, December 6, 2007

### **SYNERGISTIC ACTIVITIES**

***Benchmark Model Updating Truss Structure and Cyberinfrastructure:*** Developed a Benchmark Model Updating Truss Structure in Intelligent Structural Engineering and Health Monitoring Lab at the University of Akron. A Linux Webserver and webtools were developed for sharing experimental test data and broadcast to the public. Wireless MEMS Accelerometers were instrumented for Modal Testing in the NSF REU project.

***Benchscale Shake Table of UCIST:*** A shake table has been used for research and education as

a project in a graduate course (dynamics of structures) at UAkron.

**Cyberinfrastructure Development and S/W Development:** Developed a Hybrid Testing S/W with TCP/IP Connection; Implemented Alpha-OS algorithm; Developed a novel Predictor-Corrector algorithm for Hybrid Testing; Developed NEES-ABAQUS API and Integrated it into UI-SimCor; Developed Self-learning Simulation Research S/W and Parallelized Software Framework (combined FE Software with Genetic Algorithms) under TCP/IP Network Connection for Bioengineering Applications

**Participations:** Field mission trip to Indonesia Earthquake and Co-authored a Mid-America Earthquake (MAE) Center Report

**Training Activities:** Developed Training Materials and Lectured on Nonlinear Finite Element Analysis with Diana 9.1 and Concrete Material Models; Lectured on fundamentals of genetic algorithms in REU workshop.

**Professional Service:** Reviewer for the Journal of Earthquake Engineering, Engineering Structures, Journal of Structural Control & Health Monitoring, Journal of Performance of Constructed Facilities, Journal of Shock and Vibration, Journal of Aerospace Engineering

**Society Affiliations:** Associate Editor of KSCE Journal of Civil Engineering (SCIE), Associate Member of American Society of Civil Engineers