

FARID AMIROUCHE

A. FIELDS OF INTEREST:

Biomechanics of Human Joints stability analysis, Smart Implants, Medical Devices, Total Knee and Hip Arthroplasty, Spine fusion techniques, Multibody Dynamics of Rigid and Flexible systems, Numerical Methods for Complex Dynamical Systems, Nanomechanics, Advanced Dynamics, Human Body Vibration, Neural Networks applications. Micropump and Drug Delivery.

B. EDUCATION:

University of Cincinnati, Cincinnati, Ohio

Ph.D. in Mechanical Engineering with emphasis on Biomechanics, June 1984

M.S. in Aerospace Engineering and Applied Mechanics, March 1981

B.S. in Engineering Science, June 1979

C. EXPERIENCE

2009-2010

Fellow ALP (Academic Leadership Program Big 10 Universities)

2005 - present

CEO and President

Ortho Sensing Technologies (OST)

UIC startup. Negotiated all the licensing agreements, built a portfolio of 6 patents in wireless prostheses and implants for knee, hip and spine arthroplasty, raised private and industrial funds and managed all the operations from business to the engineering of prototypes.

2006 – present	Director of Orthopaedic Research Department of Orthopaedics, College of Medicine, UIC (Manage research in a Department of 12 Faculty and 35 Orthopedic residents) supervise all the research, develop the industrial relations and sponsored research, design seminars and outreach programs, and work closely with the alumnus.
2007 – present	Illinois Bone and Joint Institut Research Coordinator (work with Dr. Wayne Goldstein president of IBJI to build a partnership with UIC Orthopedics.) IBJI is the largest orthopedic consortium in the Midwest (120 Orthopedic Surgeons.
1997 –present	Professor Orthopaedics, Bioengineering and Mechanical Engineering University of Illinois at Chicago Director Biomechanics Research Laboratory (supervise over 11 MS and PhD students)
2003-2007	Adjunct Professor Department of Orthopaedics College of Medicine University of Illinois, Chicago
1990-1997	Associate Professor Mechanical Engineering Department Bioengineering Department University of Illinois at Chicago
1993-1994	Visiting Scientist National Research Council of Canada Ottawa, Canada
1984 - 1989	Assistant Professor Mechanical Engineering Department University of Illinois at Chicago
1986 - 1996	Director of Undergraduate CAD Laboratory Mechanical Engineering Department University of Illinois at Chicago
March 1989	ICOMP Visiting Scientist NASA Lewis Center, Structure Dynamics Division
June1987-Sept	Argonne National Laboratory

1987

Visiting Scientist (DOE Fellow)

“Worked on Implementation of Robotics to the IFR Fuel Cycle Process”

D. AWARDS AND PROFESSIONAL ACTIVITIES:

ALP Fellow 2009-2010 A consortium of 12 research universities, including the 11 members of the Big Ten Conference and the University of Chicago. The mission of which is to advance academic excellence by sharing resources and promoting and coordinating collaborative activities across the member universities. The work is focused on three areas of dynamic, evolving collaboration: (1) national leadership for higher education; (2) combining, leveraging and expanding resources of member universities; and (3) expanding learning opportunities by sharing unique courses and programs.

Laureate for Young Entrepreneur Initiative (YEI) 2007, Sponsored by the French Government . Started ORTHOSCIENTIFIQUE a company in Toulouse and won a \$250,000 to initiate the startup at a midi Pyrenees incubator. Developed a strong partnership with the Orthopedic community and pharmaceutical in Castre. Initiated a strong collaboration with the American council and Toulouse mayor office as well the Integrated system group at LASS (CNRS).

National Academies, Advisor to the Nation on Science, Engineering and Medicine: special invitee for Keck Futures Initiatives Conference on How to connect prosthetics to the Brain, November 2006

Inducted as Chevalier into the “Palme Academique” France, June 2006

University of Illinois Scholar Professor, University of Illinois, December 2005

Fellow of the American Society of Mechanical Engineers ASME, 2005

Membre Titulaire of the World Academy of Biomedical Technologies at UNESCO, Paris France, April 2004

Vice President of Biomint/Unesco. Micro and Nantechnology Applications to Medicine. June 2003-Present

Faculty Research Award, 2003, Contributions to Outstanding Research in Engineering. University of Illinois at Chicago.

NATO COLLABORATIVE RESEARCH AWARD; July 1995-1997

This research is being conducted with the University of Budapest in Hungary on work related to head neck stability and human body vibration control in off-road vehicles.

RALPH R. TEETOR EDUCATIONAL AWARD. Received October 1, 1994.

At the AEROTECH annual meeting in Los Angeles, California, six awards were given to faculty members from around the nation. Recipients of the award are chosen on the basis of their academic training, contributions to teaching and research, participation in extracurricular student activities, and benefits expected from the award.

Recipient of the G-7 Summit Fellowship for 1993-94.

This international award is given to outstanding scientists from the G-7 countries in the areas of science and engineering to advance the state of the art of technology in developed countries. The National Research Council of Canada sponsors the program.

Visiting Scientist, NASA-Lewis Center. March 1989. Recipient of the ICOMP Faculty visiting consultant award.

DOE Fellowship, 1987 (June-September) Summer Faculty Program at Argonne National Laboratory.

National Academy of Sciences, Travel award to present a paper at the World Congress of Applied Mechanics, Grenoble, France.

Outstanding Graduate Student, Mechanical Engineering University of Cincinnati 1983-84

Professional Activities:

- National Science Foundation: Panelist for Research Initiation Grants 1990-present Dynamics and Control Division.
- National Science Foundation: Panelist and team leader for Research Initiation Grants 1991 Dynamic Systems and Control Division
- American Society of Mechanical Engineers - Chicago Regional Section Industry-University Liaison, 1992
- American Society of Mechanical Engineers - Student Faculty Advisor (1989-1992)
- Secretary, Treasurer and Newsletter editor of the Mechanics Division, American Society of Engineering Education (ASEE) (June 1986 - 1989)
- ASME Design and Mechanism Conference - Chicago 1990
- ASME Computers and Engineering - Anaheim, California 1988, Session Chairman/Co-Chairman

- Nonlinear Vibration, Dynamics and Mechanisms Conference
VPI & SU 1988, 1990 Session Chair
- American Society of Mechanical Engineers (ASME) - Midwest Regional Conference 1991, Peoria, Illinois
Organized the University of Illinois at Chicago Student Projects, Assisted in the program development
- Midwest Regional Student Conference 1992, Chicago, Illinois (ASME)
Committee Leader and Organizer
University of Illinois at Chicago host representative
- SME Bioengineering Division, member 1990-present
- Chicago Biomechanics Symposium, Chairman and organizer - September 14 1995
- ASME Solid mechanics Division, Biomechanics Division- Organized several Sessions on Multibody 28 Dynamics application to Biosystems. 1990-present
- McNu97 Biomechanics of Musculoskeletal Systems- Chairman and symposium organizer. June 28-July 2 1997. NWU, Evanston, Illinois
- ASME Vehicle Dynamic Systems Division. Organized the Symposium on Vehicle Technology. November 1999, Nashville TN
- ASME Vehicle Systems Division, Member 1998- present
- SAE TOPTEC Conference 1997, Chairman and Organizer,
- ASME Bioengineering Division 1997-present, Chairman of several sessions, organizer of Joints Mechanics symposiums and active member in annual biomechanics planning
- IEEE-IMBS International Conference in Micro-Sensors Applications to Medicine, Technical Committee Member, Rome 2001
- ASME Winter Annual Meeting, Chairman of Session on Spine, New Orleans, Chairman, November 2002
- ASME Bioengineering Summer Conference, Joints Bio-mechanics Symposium – Chairman, Florida, June 2003
- International Congress on Sports Dynamics – ICSD 2003: *Discovery and Application*, Chairman, Singapore, September 2003
- International Conference on Micro-technology in Medicine, Chairman, Chicago, September 2003
- International Journal of Health Care Engineering, Editorial Board, 2004
- BIOMINT, Conference Chair/ Organizer, 2004
- WORLD CONGRESS ON MAN’S HEALTH, Conference Chair/Organizer, 2004
- ASME_ SPINE BIOENGINEERING, Conference Chair/ Organizer, 2004
- ASME_ BIOMECHANICS OF THE HAND, Conference Chair/ Organizer, 2004,2005
- ASME- Design Committee, Member, 2004

- ASME- Bioengineering Committee, 2004
- Member BIOMINT- UNESCO, 2003
- Chairman conference organized by WABT- UNESCO, Paris France 2004
- Membre de L'Academie de Biotechnologie – UNESCO- 2004
- Fellow of the ASME, 2005
- University Scholar, University of Illinois at Chicago, December 2005
- National Academies Keck Futures Initiatives Conference invitation attendee , November 2006
- IASTED, Member Technical Committee, Biomechanics, 2006
- NIH, Permanent Member of the review Committee for Fellowships: Physiology and Pathology of Organ Systems, **2005- present**
- NIH, Reviewer for National Institut of Biomedical imaging and Bioengineering, **2006-present**
- NIOSH, Pittsburgh Research Laboratory, **Consultant 2004- present**
- IEEE Engineering Medicine and Biology, **Technical committee member 2006-2009**
- IEEE Engineering Medicine and Biology, **Chair Bio-robotics; Surgical Planning and Orthopedic Biomechanics 2007**
- Department of Defense Orthotics and Prosthetics , Washington DC, Special Committee Member, 2007-2008
- American Human Vibration Conference, Hyatt Regency Hotel , Chicago, June 3-6 2008 (**Chairman and organizer**)
- Emerging Technologies in Orthopedics, **Chairman and Organizer**, Chicago, IL (October 2008)
- Engineering of Human Joints, Science –Chicago, February, 2009

Reviewed Journal papers for

- Journal of Computational Mechanics
- Journal of Physiology
- Journal of Biomechanics
- Journal of Biomechanical Engineering (ASME)
- International Journal of Heavy Vehicles
- Journal of Mechanisms, Transmissions and Automation in Design (ASME)
- Journal of Dynamics Systems Measurements (ASME)
- ASME Journal of Design
- IEEE Robotics and Automation Journal
- Journal of Applied Mechanics (ASME)
- ASME Design, Mechanisms, Applied Mechanics, Biomechanical Engineering,
- Computers and Engineering Conferences
- IEEE Robotics Conference
- AIAA Dynamic Specialists, SDM, Control Conferences
- Journal of Guidance, Control and Dynamics (AIAA)

- Journal of Nonlinear Vibration
- Journal of Healthcare and Technology: *Official Journal of the European Society for Engineering and Medicine*
- Mechanics of Structures and Machine

Editorial Board (Member)

- Journal of Healthcare and Technology: *Official Journal of the European Society for Engineering and Medicine*
- International Congress on Sports Dynamics
- Mechanics of Structures and Machine
- Institut for Mechanical Engineers, England. Journal of Systems and Control Engineering
- International Journal of Sports Technology
- Recent Patents in Mechanical Engineering Journal

Reviewed Research Proposals for

- U.S. Army Triangle North Carolina
- National Science Foundation (NSF) Dynamics and Control Division
- National Science Foundation (NSF) Manufacturing Division
- National Science Foundation (NSF) International Exchange Program
- NIH
- NIOSH
- NATO
- Manufacturing Research Center (UIUC-UIC)

Reviewed Books for

- Addison-Wesley Publishing Company
- Harper and Row Publishers, Inc.
- Prentice Hall Publishers
- McGraw-Hill
- Irwin Publishing
- Allyn bacon

Professional and Society Affiliations

- American Society of Mechanical Engineers (ASME)
Full member
- Orthopedic Research Society (ORS)
Full member
- International Society of Biomechanics
Member
- American Society for Engineering Education (ASEE)
Member
- American Institute of Aeronautics and Astronautics (AIAA)
Member

- Society of Automotive Engineers (SAE)
- Illinois Academy of Science

E. CONSULTING:

Partial list

- NASA Lewis Center, Cleveland, OH.
- Veteran Hospital, Hines, IL
- Chicago Water Proclamation District, Chicago, IL
- Johnson Controls, Warren Michigan
- Allied Signal, South bend, IND
- Water Reclamation District Chicago
- Sears Manufacturing
- Caterpillar
- Law firms

G. PUBLICATIONS

Books

1. F. Amirouche, *Computational Methods in Multibody Dynamics*. Prentice Hall, 1992 (also translated in Japanese and Korean)
2. F. Amirouche, *Computer Aided Design and Manufacturing*. Prentice Hall, 1993
3. F. Amirouche, *Computer Aided Design and Manufacturing*. Prentice Hall, 1994. Solution Manual
4. F. Amirouche "Principles of Computer Aided Design and Manufacturing" 2nd Edition (4 new chapters) Prentice Hall 2004
5. F. Amirouche "Fundamentals of Multibody Dynamics-Theory and Applications-" Birkhauser 2006
6. F. Amirouche, *Human Body Vibration Control*, SAE , 1977
7. F. Amirouche, **Fundamentals of Biomechanics, Human Joints and Musculoskeletal Systems Dynamics**. McGraw Hill, scheduled for 2009 (in final stage)
8. Amirouche F, Gonzalez MH, Aram Luke, "Hip Biomechanics," p1-17, Taylor and Francis, London, 2006 (Chapter)
9. F. Amirouche , Introduction to Finite Element Method, Handbook for Mechanical Engineers (MARKs), McGraw Hill, 2007 (Chapter)
10. F. Amirouche, Computer Aided Design, Computer Aided Engineering and Variational Design, Handbook for Mechanical Engineers (MARKs), McGraw Hill 2007 (Chapter)

Articles in Refereed Journals

1. Amirouche F. and Huston, R.L., "Collaborative Techniques in Modal Analysis," Journal of Guidance, Control and Dynamics (AIAA), Vol. 8, No. 6, pp. 783-786, 1985.
2. Amirouche F., "Dynamics Analysis of Tree-Like Structure Undergoing Large Motions - A Finite Segment Approach," Journal of Engineering Analysis, Computational Mechanics, Vol. 3, No. 2, pp. 111-117, June 1986.
3. Amirouche F., "Estimation of the Stiffness Matrix in the Study of Flexibility Effects in Large Structures," Journal of Vibration, Acoustics, Stress and Reliability in Design (ASME), Vol. 109, pp. 283-288, July 1987.
4. Amirouche F. and Tongyi, Jia, "Automatic Elimination of the Undetermined Multipliers in Kane's Equations Using a Pseudo-Uptriangular Decomposition (PUTD) Method," Journal of Computers and Structures, Vol. 27, No. 2, pp. 203-210, 1987.
5. Amirouche F., "Equations of Motion of a Two-Arm Robot Manipulator Including the Flexibility Effects," International Journal of Robotics and Automation, Vol. 2, No. 2, pp. 77-85, 1987.
6. Amirouche F., "Modeling of Human Reactions to Whole-Body Vibration", Journal of Biomechanical Engineering (ASME), Vol. 109, No. 211, pp. 210-216, 1987.
7. Amirouche F., "Biodynamic Analysis of the Human Body Subjected to Vibration", IEEE Engineering in Medicine and Biology, pp. 22-26, 1987.
8. Amirouche F. and Tongyi, Jia, "A Pseudo-Uptriangular Decomposition Method for Constrained Multibody Systems Using Kane's Equations," Journal of Guidance, Control and Dynamics (AIAA), Vol. 10, No. 7, pp.39-46, 1988.
9. Amirouche F., Tongyi, Jia and Ider, S.K., "A Recursive Householder Transformation for Complex Dynamical Systems with Constraints," Journal of Applied Mechanics (ASME), Vol. 55, No. 3, pp. 729-734, 1988.
10. Amirouche F. and Huston, R.L., "Dynamics of Constrained Tree-Like Structures," Journal of Dynamic Systems, Measurement and Control (ASME), Vol. 110, No. 1, pp. 78-83, 1988.
11. Amirouche F., "Determination of the Generalized Constraint Forces in Multibody Systems Using Kane's Equations," Journal of Theoretical and Applied Mechanics, Vol. 7, No. 1, pp.3-. 20, 1988.
12. Amirouche F. and Tongyi, Jia, "Modeling of Clearances and Joint Flexibility Effects in Multibody Systems Dynamics," Computers and Structures, Vol. 29, No. 6, pp.983-991, 1988.
13. Amirouche F. and Ider, S.K, "Simulation and Analysis of a Biodynamic Human Model Subjected to Low Accelerations- A Correlation Study," Journal of Sound and Vibration, Vol.123, No.2, pp. 281-292, 1988.

14. Amirouche F. and Khang, Jay, "Impact Force Analysis in Mechanical Hand Design," Part I. International Journal of Robotics and Automation, Vol. 3, No. 3, pp. 158-164, 1988.
15. Amirouche F. and Vashi, T.R., "Accessible Region and Synthesis of a Two-Arm Robot," International Journal of Robotics and Automation, Vol.3, No.3, pp. 133-139, 1988.
16. Amirouche F. and Ider, S.K., "A Recursive Formulation of the Equations of Motion for Articulated Structures with Closed Loops - An Automated Approach," Computers and Structures, Vol. 30, No. 5, pp. 1135-1145, 1988.
17. Amirouche F. and Ider, S.K., "Coordinate Reduction in the Dynamics of Constrained Multibody Systems, A New Approach," Journal of Applied Mechanics (ASME), Vol. 55, No. 2, pp. 889-904, 1988.
18. Amirouche F. and Ider, S.K., "A Look at the Constraint Violations in Constrained Multibody Dynamics," Journal of Dynamic Systems, Measurement and Control, (ASME), Vol. 111, No. 2, pp. 238-243, 1989.
19. Amirouche F. and Ider, S.K., "Influence of Geometric Nonlinearities in the Dynamics of Flexible Tree-Like Structures," Journal of Guidance, Control and Dynamics (AIAA), Vol. 12, No. 6, pp. 830-837, 1989.
20. Ider, S.K. and Amirouche F. "Nonlinear Modeling of Flexible Multibody Systems Dynamics Subject to Variable Constraints," Journal of Applied Mechanics, (ASME), Vol. 56, No. 1, pp.444-450, 1989.
21. Amirouche F. and Ider, S.K., "Numerical Stability of the Constraints Near Singular Positions in the Dynamics of Multibody Systems," Computers and Structures, Vol. 33, No. 1, pp. 129-138, 1989.
22. Tongyi, Jia and Amirouche F., "Optimum Impact Force in Motion Control of Multibody Systems Subject to Inequality Constraints," Mechanics Research Communications, Vol. 16, No. 3, pp. 163-173, 1989.
23. Ider, S.K. and Amirouche F., "Stability Analysis in Constrained Multibody Systems Dynamics," Journal of Computational Mechanics, Vol. 6, No. 516, pp. 327-340, 1990.
24. Amirouche F. and Tongyi, Jia, "Spatial Coordination of a Two-Arm Robot Subjected to Geometrical and Kinematical Constraints," Advances in Engineering Software, Vol. 12, No. 1, pp. 21-26, 1990.
25. Tongyi, Jia and Amirouche F., "Optimum Impact Force in Motion Control of Multibody Systems Subject to Intermittent Constraints," Computers and Structures, Vol. 33, No. 5, pp. 1243-1249, 1990.
26. Amirouche F., Ider, S.K. and Trimble, J., "Analytical Method for the Analysis and Simulation of Human Locomotion," Journal of Biomechanical Engineering (ASME), Vol. 112, pp. 379-385, 1990.
27. Shareef, N.H. and Amirouche F., "Implementation of a 3-. D Isoparametric Finite Element on Supercomputer for the Formulation of Recursive Dynamical

- Equations of Multibody Systems," Journal of Nonlinear Dynamics, Vol. 2, pp. 319-334, 1991.
28. Amirouche F., Shareef, N.H., "Gain in Computational Efficiency by Vectorization of General Purpose Code for Multibody Dynamic Simulations," Journal of Computers and Structures, Vol. 41, No. 2, pp. 292-302, 1991.
 29. Amirouche F. and Tongyi, Jia, "Natural Dynamics and Control of Manipulators in Presence of Obstacles," ASME Journal of Dynamic Systems, Measurement and Control, Vol. 113, pp. 171-174, 1991.
 30. Amirouche F., Shareef, N.H. and Xie, M., "Dynamic Analysis of Flexible Gear Trains/Transmissions - An Automated Approach," ASME Journal of Applied Mechanics, Vol. 59, No. 4, pp. 976-982, 1992.
 31. Amirouche F. and Xie, M., "Minimization of Vibration in Elastic Beams with Time Variant Boundary Conditions in the Multibody Systems," AIAA Journal of Guidance, Control and Dynamics, Vol. 15, No. 5, pp. 1265-1271, 1992.
 32. Amirouche F. and Xie, M., "An Explicit Matrix Formulation of the Dynamical Equations for Flexible Multibody Systems: A Recursive Approach," Computers and Structures, Vol. 46, No. 2, pp. 311-321, 1993.
 33. Amirouche F., Shareef, N.H. and Xie, M., "Time Variant Analysis of Rotorcraft Systems Dynamics - An Exploitation of Vector-Processors," AIAA Journal of Guidance, Control and Dynamics Vol. 16, No. 1, pp. 96-110, 1993.
 34. Amirouche F., Xie, M., Shareef, N.H. and Valco, M., "Finite Element Modeling of Contact Conditions in Multibody Dynamics," Journal of Nonlinear Dynamics, Vol. 4, pp. 83-102, 1993.
 35. Amirouche F., Xie, M. and Patwardhan, A., "Optimization of the contact damping and stiffness coefficients to minimize human body vibration", Journal of Biomechanical Engineering (ASME), Vol. 116, No. 4, pp. 413-420, 1994.
 36. Xie, M., and Amirouche F. "Treatment of Creep and Material Nonlinearities in Flexible Multibody Dynamics", AIAA Journal, Vol. 32, No. 1, pp. 190-197, 1994.
 37. Amirouche F. and Tung, C.W., "On-line Collision Avoidance and Constraint Violation Stabilization," Journal of Nonlinear Dynamics, Vol. 5, pp. 1-17, 1994.
 38. Amirouche F., Palkovic L, Woodruffe J. "Optimal Driver Seat Suspension Design for Heavy-Trucks." International journal of Heavy Vehicle Systems", International journal of Heavy Vehicle Systems", Vol. 2, No 1, pp. 19-45, 1995.
 39. Siping Li, Avinash G. Patwardhan, Amirouche F., Robert Havey and Kevin P. Meade, "Limitations of the standard linear solid model of intervertebral discs subject to prolonged loading and low-frequency vibration in axial compression", Journal of Biomechanics, Vol. 28, Issue 7, pp. 779-790, 1995.
 40. Bunag J., Patwardhan A.G., Amirouche F., "Response of Lumbar Discs to Prolonged Loading and Low Frequency Vibration in Shear, Compression, and Combined Loading", Volvo Award Competition Conducted by the International Society for the Study of the Lumbar Spine (ISSLS), 1995.

41. Amirouche F., Tajiri G., Valco M. "Dynamic Analysis of Gear Meshing Teeth Using Modified Timoshenko Beam Theory," International Journal for Numerical Methods in Engineering, Vol. 39, pp. 1-22, 1996.
42. Kerdjoudj, M., Amirouche F. "Implementation of the Boundary Element Method in the Dynamics of Flexible Bodies" International Journal for Numerical Methods in Engineering, Vol. 39, pp 321- 354, 1996.
43. Tung, C.W, Amirouche F. "Flexibility control in Redundant Flexible Multibody Systems" Journal of Guidance, Control and Dynamics (AIAA) (in review).
44. Tung C.W, Amirouche F. "The use of Linear Quadratic Optimization Control in Flexible Multibody Systems" Journal of Guidance, Control and Dynamics (AIAA) (in review).
45. S NISHIYAMA, Amirouche F. S. Hiramatsu, "Analytical and experimental investigation of pregnant woman fetus response to low frequency excitation", Japanese Health Journal, 1998
46. Tong, R. T. and Amirouche, F., "Truck suspension design: optimization and vibration control", Heavy Vehicle Systems, A Series of the International Journal of Vehicle Design, Vol. 5, Nos. 3/4, pp. 236~260, 1999.
47. F. Amirouche, M. Gonzalez, et al., "Geometrical Analysis of Potential Error in using Femoral Intramedullary Guides in Total Knee Arthroplasty." Journal of Arthroplasty, December 2000
48. F. Amirouche, M. Gonzalez, R. Teich, "Drilling with Precision in Orthopaedic Applications", Transaction of the IEEE, Information Technology in Biomedicine. Special Issue on Mechatronics in Medicine and Surgery, September 2000
49. E. Abraham, F. Amirouche, "Pressure Controlled Esmarch Bandage Used as Tourniquet", Journal of Foot and Ankle Surgery, Vol. 21, Issue 8, pp. 686-9, 2000.
50. J. Novotny, M. H. Gonzalez, F. M. L. Amirouche and Y. C. Li, "Geometric analysis of potential error in using femoral intramedullary guides in total knee arthroplasty", The Journal of Arthroplasty, Vol. 16, Issue 5, pp. 641-647, 2001.
51. Durkin M, Aram L, Amirouche F, Gonzalez, M. "Sensitivity and Error Analysis in Conjunction with Tibial Intramedullary Guides in Total Knee Arthroplasty", Journal of Prosthetics and Orthotics, Vol. 13, Num. 2 pp. 54-59, 2001.
52. Xiaodong Zhou, Louis F. Draganich and Amirouche F. "A dynamic model for simulating a trip and fall during gait", Medical Engineering & Physics, Vol. 24, Issue 2, pp. 121-127 March 2002.
53. Amirouche F, Gonzalez M, Koldoff J, Tioco J, Ham K., "A biomechanical study of the finger pulley system during repair", Technology and health care: official journal of the European Society for Engineering and Medicine, Vol. 10, Issue 1, pp. 23-31, 2002

54. F. Romero, F. Amirouche, L. Aram, M. Gonzalez, "Study of Micromotion in Modular Acetabular Components during gait and sublaxation. A Finite Element Investigation", ASME Journal of Biomechanical Engineering. 2008, vol. 130, no2, pp 21002.1-9;
55. F. Romero, F. Amirouche, L. Aram, M. Gonzalez, T. Render, P. Lewis., "Experimental and Analytical Validation of a Modular Acetabular Prosthesis in Total Hip Arthroplasty", Journal of Ortho. Surgery 2007; 2:7
56. C. Lopez-Espina, F. Amirouche, Havalad Vinod. Multi-level cervical fusion and its effect on disc degeneration and osteophyte formation. Spine Journal. 2006, vol. 31, n09, pp.972-978
57. M. Gonzalez, V. Mohan, B. Elhassan, F. Amirouche. Biomechanics of the Digit: Journal of the American Society for Surgery of the Hand. 2005 Vol. 5, Issue 1, Pages 48-60.
58. Chandran N, Amirouche F, Gonzalez MH, Hilton KM, Barmada R, Goldstein W, Optimisation of the posterior stabilised tibial post for greater femoral rollback after total knee arthroplasty-a finite element analysis, International orthopaedics 2008 Jul 2. DOI 10.1007/s00264-008-0566-3
59. Amirouche, F. Romero, C., Gonzalez, M., Luke Arm. Study of Micromotion in Modular Acetabular Components During Gait and Subluxation: A Finite Element Investigation. J. Biomech. Eng. Volume 130 , pp. 21002-08
60. F. Amirouche, Jude martin, L. Fergusson, M. Gonzalez, "Experimental set-up and sensory glove interface for microsurgery. J. of Engineering in Medicine. Volume 222, Number 1 / 2008
61. E. Zordan, F. Amirouche, "Design and analysis of a double superimposed chamber valveless MEMS micropump." Journal of Engineering in Medicine, Pages 143-151, Volume 221, Number 2 / 2007
62. Abraham EA, Gonzalez MH, Pratap S, Amirouche F, Atluri P, Simon P. Clinical Implications of Anatomical Wear Characteristics of Slipped Capital Femoral Epiphysis (SCFE) and Primary Osteoarthritis. Accepted Journal of Pediatric Orthopedics 5-4-2007
63. Hassan B, Gonzalez MH, O Neill D, Amirouche F, "Experimental Investigation of Finger Dynamics Before and After MCP Joint Arthroplasty", J of Hand Surgery, The Journal of Hand Surgery, Volume 31, Issue 2, Pages 228-235, 2006
64. Johnson, T., Amirouche, F. "Thermal behavior during ionic polymer actuation: empirical results." International Journal of Heat and Technology, pub: Edizioni ETS. Pisa, Italy, June, 2008
65. Johnson, T., Amirouche, F. "Micropump technology in biomedical applications." Recent Patents in Mechanical Engineering, Bentham Science Publishers, Volume 2, 2008
66. Johnson, T., Amirouche, F. " Multiphysics modeling of an IPMC microfluidic control device." Microsystems Technologies, vol. 14 number 6, June, 2008 pp.871-879

67. Alan Mayton, F. Amirouche, "Comparison of Seat Designs For Underground Mine Haulage Vehicles Using the Absorbed Power and ISO 2631-1(1985)-Based ACGIH Threshold Limit Methods". NIOSHTIC-2 No. 20030404, July 2006
68. F. Amirouche, Yu Zhou, Tom Johnson. "Current Micropump Technologies and Their Biomedical Applications. *Microsystems Technologies, Microsystems Technology* (2009) 15:647-666
69. Yu Zhou, F. Amirouche. Study of Fluid Damping Effects on Resonant Frequency of an Electromagnetically Actuated Valveless Micropump. *International Journal of Advanced Manufacturing Technology*. 24 April 2009
70. Zivkovic Ivan, Amirouche F., Gonzalez, M.' The Effect of Under -Reaming on the Cup/Bone Interface of a Press Fit Hip Replacement. Accepted 10-2007 *Journal of Biomechanical Engineering*.
71. C. Lopez-Espina, Amirouche F "Development and validation of a three-dimensional parametric model of the cervical spine", *International Orthopedics* (Int. review)
72. C. Lopez-Espina, F. Amirouche, S. Connolly. Investigation of bone mineral density on the risk factors of vertebral fractures and spondylosis. (review)
73. F. Amirouche, L. Dailey, M. Gonzalez, C. Lopez, "A Finite Element Model to Predict Pistoning and Stresses in a Silicone MCP Arthroplasty" *The Journal of Hand Surgery* (Int. review)
74. F. Amirouche, Andrew Pastor, M. Gonzalez," Finger Joint Torque as an Indicator of Performance in the Biomechanics of the Hand" (in progress)
75. Chow J. Gonzalez, M., Amirouche F. "Importance of Proximal A2 and A4 Pulleys to Maintaining Kinematics in the Hand: A Biomechanical study , *Journal of Hand Surgery: European Volume* JHSE-D-08-00168R1

Technical Conference Papers

1. Amirouche F. and Huston, R.L., "Flexibility and Transient Effects of a Multi-Arm Robot," 7th Symposium in Computer-Aided-Engineering and Robotics, Toronto, Canada, June 1984.
2. Amirouche F. "Use of Finite-Segment Modeling in Computer Aided Engineering (CAE)," International Conference AMSE, Minneapolis, Minnesota, August 1984.
3. Amirouche F. and Huston, R.L., "Modeling of Human Body Vibration -Part I," Mid-Central Conference Ergonomics/Human Factors, Cincinnati, OH, March 1984.
4. Amirouche F., "Modelling of a Human Body Vibration - Part II," Mid-Central Conference, Ergonomics/Human Factors. Cincinnati, OH, March 1984.

5. Amirouche F. and Huston, R.L., "Collaborative Techniques in Modal Analysis," AIAA Structures, Dynamics and Material Conference, Orlando, FL, April 1985.
6. Amirouche F., "Integration of a Two-Arm Robot in Manufacturing System," (ASEE) NCS-IIS., Dayton, OH, October 1985.
7. Amirouche F., "Human Body Vibration - Transient and Frequency Response," 36th ACEMB Alliance for Engineering in Medicine and Biology, Chicago, IL, September 1985.
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Other Scholarly work and Achievements

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Pub. No.: WO/2007/126917 **International Application No.:** PCT/US2007/007717 **Publication Date:**08.11.2007 **International Filing Date:**28.03.2007

E. FUNDING :

1. Title: "Experimental Investigation of implant stability and micromotion after Total Hip Arthroplasty", Sponsor: Zimmer, Total: \$227,000 Date: Feb 2005 - Feb2008, PI.
2. Title: "Hip Muscle Dysfunction Effects on Osteoporotic patients, Fracture Prevention and Total Hip Implant Stability and Design", Sponsor NIH, RO1 Total \$775,000 Date Oct 2009-2012 (pending)
3. Title: " Experimental Validation of Double Chamber Micropumps Flow rates for Drug Delivery Applications" , Sponsor: Baxter, Total : \$70,000 Date Nov 2008 - August 2009, PI
4. Title: " Development of Micropumps Drug Delivery Applications" , Sponsor: Baxter, Total : \$230,000 Date Sept 2009 - Dec 2010, PI (pending)
5. Title: "Development of Virtual Automation Transportation System", Sponsor: Illinois Dept of Transportation, Total: \$115,000 Date: March 2006- - June 2009, PI.
6. Title: "Embedded Sensor Technology to Optimize Component Positioning and Ligament Balancing in Total Knee Arthroplasty", Sponsor: Depuy for A startup of Ortho Sensing Technologies (OST) , Total: \$350,000 Date: March2005 -2007, PI.
7. Title: "Sensory Glove Device for grip and study of effects on stability and health in underground mine workers" Sponsor: National Institute of Occupational

Safety and Health (NIOSH), Consultant: (5%), \$120,000 Date: March 2006 - March 2007

8. Title: "Bus Rapid Transit Circulatory System", Total: \$150,000 Sponsor: DOT (Department of Transportation of California), January 2002- May 2004, PI.
9. Title: "Intermodal Freight Interchange System", Total: \$150,000 Sponsor: DOT (California Department of Transportation), Date: January 2002- May 2004, PI.
10. Title: "Design and Analysis of MCP finger joint prosthetics NEUFLEX" Sponsor: DePuy/Johnson & Johnson, Total: \$105,200 Date: August 2002-June 2003, PI.
11. Title: "Development of the Knee Fitting Device. A wireless Technology in Knee balancing." Sponsor: DePuy/Johnson & Johnson, Total: \$89,000 Date: September 2002-June 2003, PI.
12. Title: "An investigation of the Stability of DePuy Elbow Prosthetic Joint" Sponsor: DePuy/Johnson & Johnson, Total: \$68,000, Date: Nov. 2002- July 2003, PI
13. Title: "Further investigation of the Shell/Liner Interface for Hip Arthoplasty" Sponsor: DePuy/Johnson & Johnson, Total: \$68,000 Date: August 2002- August 2003, PI.
14. Title: "Investigation of A Computer Process Design of Cementless Cup Hip" Sponsor: DePuy/Johnson & Johnson, Total: \$105,200 Date: August 2000-2002, PI.
15. Title: "BIOMEMS SENSOR for GLUCOSE", Sponsor: Baxter, Total: \$67,205 Date: March 2001- December 2002, PI.
16. Title: "Graduate Industrial Internship Program in BioMEMS, Co-PI, Total Amount: \$129,511 UIC match \$132,000 Total: \$ 261,511.00, Sponsor: Whitaker Foundation, Date: August 1998- Sep 2000
17. Title: "Bridge Research Center Grant" Total amount: \$100,000.00, Sponsor: UIC Center Seed Grant Initiative, Date: June 1998- June 1999, Co-PI.
18. Title: "Effects of Human Body Vibration on Pregnant women", Sponsor: MITI Japan, PI, Total Amount: \$10,000 (Gift), Date: August 1999
19. Title: "Spine Research", Sponsor: Department of Neurosurgery UIC, \$30,000, Date: August 2001-December 2002
20. "Biomechanics of the wrist in the normal and pathological state", Sponsor: Agency, UIC COM, Total amount: \$31,500, Date: Sep 1996- Dec 1997, CoPI
21. Title: "Patellar Tracking as a Function of Tibial Component Rotation After Total Knee Arthroplasty", Sponsor: DePuy Surgical Company,, Total amount \$50,000, Date: June 1997- June 98, CoPI (Gift)
22. Title: "Evaluation of the C2V Chair assembly for ride comfort and vibration control." Sponsor: LORAL Western Developments, CA, Total Amount: \$18,516, Date: Oct 1995- June 1996, PI.
23. Title: "Biomechanics of the spine: Dynamics and Stability." RPSLMC, Total Amount: \$168,006, Date: Oct 1996 - Sep 1999, PI.

24. Title: "Biomechanics of low back flexion-distraction therapy using Finite Element Method", Agency: NIH Total of \$288,000, Date: Dec 1994 - Sep 1997, Co-PI.
25. Title: "Study of human vibration control in Heavy vehicles" Agency: NATO, Total Amount: \$ 7,500, Date: Sep 1995 - Aug 1996, PI.
26. Title: "Optimal C2V Operator Performance using Man in Loop Strategy in Active Vibration Control", LORAL Western Developments, CA, Total Amount: \$ 61,800, Duration: August 1996- June 1997, PI.
27. Title: "Dynamic Response of the Spine under Cyclic Loading", Veterans' Administration, Hines, Illinois, Total: \$ 11,028 Date: Jan 1993- June 1993, PI.
28. Title: "Development of Finite Element Model of The Lumbar Intervertebral Disc Body Unit", Rush Orthopedic Research Department (RPSLMC), Total: \$35,737, Date: March 1993-June 1995, PI.
29. Title: "Conceptual Design of a Robotic Arm for Insertion and Retrieval of Radioactive Parts in a PET Scan System", GE Medical Group Wisconsin, Total : \$21,500 /Gift Date: Jan 1993 - June 1993, PI.
30. Title: "Boundary Element Method in the Dynamics of Flexible Multibody Systems - Theory and Applications", National Science Foundation (N.S.F), Total:\$210,000, Date : Dec 1992 - June 1993, PI.
31. Title: "Design and Layout of a Complete SPECT Scan System", Sponsor: Rush Presbyterian Medical School, Chicago, IL, \$10,094/Gift, December 1992 -June 1993, PI.
32. Title: "Application of Multibody Dynamics to the Analysis and Simulation of Elastic Rotorcraft Systems", National Aeronautics and Space Administration (NASA) - Lewis Research Center, Total: \$220,000 Date: Nov 1989 - Jan 1994, PI.
33. Title: "Dynamic Response Characteristics of a Lumbar Spine", Veterans' Administration, Hines, Illinois, Total: \$17,031 Date: June 1992 - Sep 1992, PI.
34. Title: "Dynamic Response Characteristics of a Lumbar Spine", Veterans' Administration, Hines, Illinois, Total: \$6,607 Date: March 1992- June 1992, PI.
35. Title: "Embedded Sensors for Multichip Module Manufacturing Processes Control", MRC, Total Cost \$ 20,000. (Principal Investigators: P. Hesketh and J. Maclay) Date: Sep 1991- June 1992, Co-PI.
36. Title: "Orthotic Stabilization of Fractures of the Thoracic and Lumbar Spine", Veteran's Administration, Hines, Illinois, Total: \$5,946, Date: July 1991- Sep 1991, PI.
37. Title: "Regularization and Control of Multibody Systems with Irregular Modes of Operation", National Science Foundation (NSF), Total: \$30,000 Date: Sep 1989 - April 1991. PI.
38. Title: "Performance and Stability in High Speed Articulated Structures Undergoing Quick Maneuvers -- Theory and Applications", Air Force Office of Scientific Research (AFOSR), Total: \$70,000 Date: Sep 1989 - Oct 1991, PI.

39. Title: "Integration of Multibody Dynamics Code with IDEAS- Solution to Local Industry Needs", SOFTECH/EECS, Total \$18,000 Date: April 1991 – Dec 1991, PI.
40. Title: "Robots for Operation in a Micro gravity Environment. Minimization of the Reaction Forces at the Base", UIC Research Board, \$6,600 Date: Sep 1989 –Sep 1990, PI.
41. Title: "Dynamics and Control of a Two-Arm Robot", Illitech, Total: \$42,000, Date: March 1986 - June 1987, PI.
42. Title: "Further Developments in the Analysis of a Two-Arm Robot", Illinois-DCCA, Total: \$2,200 Date: April 1987 - Dec. 1987, PI.
43. Title: "Effects of Vibration on Seated Worker", U.S. Department of Health, and Human Services Total: \$1,700 Date: June 1985 - June 1986, PI.
44. Title: "Impact Force Control of a Five Finger Robot Hand", University of Illinois, Research Board Grant, Total: \$6,500 Date: July 1986 - June 1987, PI.
45. Title: "Dynamic and Control of a Two-Arm Robot", McDonnell Douglas Manufacturing Industry, Systems Company, Total: \$180,000, Date: May 1986 - June 1987, PI.

H. STUDENTS SUPERVISED

Ph.D. Theses Advised

1. "Stability and Dynamics of Constrained Flexible Multibody Systems," S.K. Ider (August 1988).
2. "Dynamic Analysis of Multibody Systems Operating in The Presence of Obstacles," T. Jia (October 1990).
3. "Dynamic Analysis of Time-Variant Constrained Multibody Systems," N.H. Shareef (February 1991).
4. "Computer Methods in the Dynamics of Elastic-Plastic Rotorcraft Systems", Mingjun Xie (January 1992).
5. "Creep Analysis of Human Spine and its Response to Harmonic Excitations", Siping Li (December 1993).
6. "Dynamics and Linear Quadratic Optimal Control of Flexible Multibody Systems", C.W. Tung (February 1994).
7. "Functional Biomechanics of the Hip as Related to Total Hip Replacements", Debra Hurwitz (February 1994).
8. " Nonlinear Dynamic and Finite Element Analysis of Gear Teeth Meshing", Xinmin Xu (March 1998)
9. "Application of Boundary Element Methods to the Dynamic Analysis of Flexible Multibody Systems", Kerdjoudj Mohamed (December 1994.)

10. "Dynamic Analysis of Lifting Conditions--Correlation of Experimental and Theoretical Results", Li, M (June 1998.)
11. "Dynamic Simulation of Human Gait and Falling", Xiaodong Zhou (1999)
12. "Investigation of Control Strategies in Ride Comfort and Human Body Vibration Control ", Tung, Rick (October 2001)
13. "Non-Linear Thermal Distortion Prediction of a Silicon Monochromator using Finite Element Method", Gordon Tajiri. (March 2001).
14. "Development of Biomems sensor for Glucose", Tom Johnson (2007).
15. " Development of a Wireless Device for Balancing the Knee during Total Knee Arthroplasty", Carlos Lopez-Espina.(Fall 2008)
16. "Design of a MEMS micropump for Drug Delivery", Enrico Zoltan (fall 2006)
17. "Investigation of implant stability after Total Hip Replacement", Ivan Zivkovic (Fall 2006)
18. "Effect of falls on elderly. An experimental and analytical Investigation", Nagarajan Chandra (Fall 2009)
19. "Experimental and Finite Element Investigation of Posterior Elbow Dislocation", Samer Al Kork (Fall 2008)
20. "Biomechanics of Finger/Pulley System on the Hand", Mark Gonzalez, MD (Fall 2009)
21. "Electromagnetically actuated MEMS valveless double chamber Micropump" Yu Zhou, June 2009

Masters Theses Advised

1. "The Study of Compliance and Flexibility Effects of a T3 Robot Using Beam Elements", Joseph Syriac, November 1985.
2. "Computer Aided Design Program for Gears and Saw Blades," Tom Landyut, March 1985.
3. "Static and Dynamic Analysis of a T3 Robot Using SAP IV," Rakesh Shah, June 1985.
4. "Transient Response of Constrained Multibody System Using the Zero Eigenvalue Theorem," Bachubhai A. Patel, June 1985.
5. "An Investigation of the Forces and Damping Constraints in the Human Body Vibration", Sameer Hardikar, October 27, 1986.
6. "Accessible Region and Synthesis of a Two-Arm Robot", Vashi Tushar, November 17, 1986.
7. "Impact Force Analysis in Robot Systems with Terminal Flexible Bodies Using Modal Analysis Compensation", Massoud Akthar, September 1987.
8. "Position Readjustment in Robot Systems with Terminal Flexible Bodies Using Modal Analysis Compensation", Massoud Akthar, September 1987.

9. "Simulation of 3D Spinal Model for Different Loadings and Postures", R. Patel, September 1987.
10. "Classification and Coding in Group Technology with Application to Small Industry", Rana, S., October 1987.
11. "Study of Abnormalities in Human Walking Patterns," Gordon Tajiri, June 1989.
12. "Study of Human Gait for Patient with Hip Replacements--Theoretical and Experimental Analysis," Debby Herwitz, summer 1989.
13. "Functional Mechanics of the Anterior Deficient Knee", Doreen A. Birac, April 1990.
14. "Regularization and Stability of Constrained Multibody Systems Dynamics", Tung, Roger, December 1990.
15. "Planar Motion Analysis in Multibody System with Irregular Modes of Operation", Lin, S. J., December 1990.
16. "Dynamic Analysis of a Rotating Beam in the Frequency Domain", Nandan Metha, June 1991.
17. "Analysis of Multibody Systems Subjected to Variables Modes of Operation ", Eno-Ob Eknog, July 1991.
18. "Redundancy Modelling and Minimization of Ground Reactions in Space Manipulators", M. Bansoli, December 1991.
19. "Vibration Control in Torsional Shafts with Time Variant Boundary Conditions", Tarun Arora, December 1992.
20. "Energy Minimization of a Biodynamic Model in the Sitting Position Subjected to Whole-Body Vibration", Dave Keon, June 1992.
21. "Redundancy Modelling of Optimum Lifting Conditions," Bhavin Kadakia, May 1992.
22. "Interactive Modelling and Dynamic Stress Analysis of Two Elastic Spur Gears in Mesh", Steven Tai, June 1993.
23. "An Interactive Graphic User Interface for the Analysis of Dynamic Mutibodied Systems", Eric Bell, January 1993.
24. "Conceptual Design of a Robotic Manipulator for Handling Radioactive Scanning Applications", Heidi Vincent, June 1993.
25. "Torsional Vibration Control in Shafts Using Time Variant Boundary Conditions," James Haberstrom, June 1994.
26. "Experimental Investigation of the Dynamic Response of a Seated Human Subjected to Low Accelerations", Cheema, K., December 1995.
27. "Automatic Meshing of Transparent Boundaries in FEM Using Quadrilateral Elements", Chongying Wang, July 1994.
28. "Response of Lumbar Discs to Prolonged Loading and Low-Frequency Vibration in Shear, Compression, and Combined Loading", Julie Bunag June 1995.

29. "Analysis of Contact Conditions at the Knee Joint Using Finite Element Analysis", Bonnie Beard, June 1996.
30. "Biomechanics of the Low Back Flexion-Distraction Therapy", Lian Qiming February 1996.
31. "Design of Bridge Control support", Samartino, March 2002.
32. "FEM modeling of TKA", Robert Chiatti, December 2002.
33. "Understanding Fusion in the Lumbar Spine", Ali Raja, March 2001.
34. "Analysis of THR with and without Cement", Luke Aram, February 2002.
35. "Finite Element Study of Vibrations Induced Stress in Total Hip Replacement Stability", Francisco Romero, December 2002.
36. "Finite element investigation of Lumbar spine fusion", Ravikumar Varadarajan. December 2002.
37. "Design of an Automatic Bus for City of Chicago", Pedro Gonzalez-Mohino, December 2002.
38. "Induced Stress in Total Knee Arthroplasty from Malrotation", Nagarajan Chandran, December 2002.
39. "Biomechanics of the cervical spine. Parametric modeling and finite element investigation of osteoporosis, disc degeneration and fusion techniques", Carlos G. Lopez-Espina, December 2003.
40. "Finite element análisis of Osteoporosis in Lumbar Spine", Lakshminarayanan Hariharan, December 2003
41. "Surface imaging of wear patterns and contribution of stresses in slipped capital femoral epiphysis", Nikhil Kulkarni, December 2003
42. "Experimental Investigation of Finger Dynamics", David McNeal, December 2003
43. " Design and implementation of automated routing techniques in BRT", Joe Solomon, December 2003
44. "Vehicle Highway Automation - a new paradigm in Intermodal Freight and corridor network design for Northeastern Illinois", Khurram T. Mahmudi, May 2004.
45. "Experimental Investigation of Posterior Elbow Dislocation", Surya Pratap Rai, (August , 2004)
46. "Design of a MEMS Micropump for Dialysis" Enriko Zoltan, (August 2004).
47. "Experimental Investigation of coordinated hand movements during suturing", Jude Renil Martin, (Summer 2005)
48. "Modelling of a sky hook suspension system for a heavy truck driver's seat", Bertrand Valero, (Summer 2005)
49. "Study of the active suspension damping using servomotor ballvalve assembly", Ramkumar Chandrasekar, (Fall 2005)

50. "Finite Element Analysis of the Lumbar Spine", Navish Makkar, (Summer 2005)
51. "Investigation of material properties of the bone using CT scan data", Ashritha Nookala (Summer 2005)
52. Investigation of characteristics of tire design on telehandler vehicle, Daniele Perotino, Dec 2007
53. Feasibility Study of an environmental friendly Telescopic handler, Fabio Chiapello, Dec 2007
54. Integrated data Acquisition Card for multiple Input/output, Pierre Calmes, Sept. 2007
55. Integrated data Acquisition Card for multiple Input/output, Remie Espinasse, Sep. 2007
56. Hand biomechanics. Effects of tendon/pulley on the fds and fdp, kim balogh, 2008

Undergraduate Students/ Interns Supervised:

A large number of undergraduate students were supervised for various research activities from 1984-2004. The current students for 2004-2005 include:

Ruth Swidler,
 Barbara Dudas
 Elaine kulwiack
 Jonathan Cazals, ENSAM, France
 Baptiste Geeversorthet, EGIM, Marseille, France
 Magalie Augros, EGIM, Marseille, France
 Labidi Houda, EGIM, Marseille, France
 Rachele Alleha, Politecnico di Torino, Italy
 Evelyne Tape, UIC
 Hilary Mottl, UIC
 Jonathan Sensinger UIC
 Hilary Molt UIC
 Seema Farooqui, UIC
 Yahya Youssef, UIC

I. NON-ACADEMIC EXPERIENCE:

University of Illinois at Chicago

- Member of the Mechanical Engineering Graduate Committee (1994-present)
- Member of the Mechanical Engineering Department Advisory Committee (1991-1992, 1998, 2004-present)
- Mechanical Engineering Graduate Committee Member (January 1990-1991)
- Member of the Graduate College Mathematical & Science Committee (1992)

- Senator, Faculty Senate's of the University of Illinois - Chicago (1991-1994, 1998-2002)
- College of Engineering Senate Chairman. (1991-1994)
- College of Engineering Student Appeal Committee (1992)
- Member, Executive Committee, Bioengineering (1992 - 2000)
- Member of the Bioengineering Curriculum Committee (1992-2000)
- Member, University of Illinois Faculty Advisory Committee (1992-1998)
- Member of Chancellor's Student Judiciary Review Committee (1994)
- Member of Student Judiciary Hearing Committee (1994-1996)
- Honors College Faculty Fellow (1998-present)
- Member of College of Engineering Executive Committee (2002-2004)
- Member of Various Departmental Committees for Faculty hire MIE, 1990-present
- Coordinator of the MIE Industrial Advisory Committee, 2000-present
- Member of the Faculty Committee for Orthopedic Research, 2001-present
- COM Department of Orthopedics Search Committee for Department Head 2003
- COE Dean Search Committee member, 2004 and 2007
- Vice Provost for Faculty Affairs, Member of the Award Committee for the University of Illinois scholar Professor. 2007
- Director of Orthopaedic Research and supervisor of Residents Theses, 1998-present

J. INVITED LECTURES:

1. "Computational Considerations in the Dynamics of Constrained Flexible Multibody Systems," NASA, NSF, DOD, Workshop, Santa Barbara, CA, August 1992.
2. "Robotics Today and Tomorrow," Cincinnati Milacron - Advance Technology Group - Cincinnati June 1984 (by invitation of the VP of R & D, Richard Missinger).
3. "Computer Integrated Manufacturing (CIM)," Ingersoll Rand, March 1985, Louisville, Kentucky (by invitation of the VP of technology, Tony Casagrande).
4. "Advanced Concepts in Computer-Aided Design and Analysis," Sergeant Lundy, Chicago, Illinois, April 1985 (by invitation of the Computer-Aided Design Group).
5. "Redundant and Constrained Multibody Systems Dynamics," SDI/NASA Workshop on Multibody Simulation, JPL, Pasadena, CA, September 1-3, 1987.

6. "Engineers in Mechanical Engineering - Role and Future," Presentation to the first year minority students. Invitation by Susan Carmona, Counselor for Minority Engineering Recruitment and Retention Program, UIC, 1989.
7. "Presentation on the Capabilities of DYAMUS (Dynamic Analysis of Multibody Systems) Program," Ingersoll Milling Co., Rockford, Illinois, June 1989.
8. "Dynamic Analysis and Simulation of Multibody Systems," Sundstrand, Rockford, Illinois, June 1989.
9. "Application of Parallel Processing to the Dynamics and Control of Multibody Systems," Structures and Dynamics Division, NASA Lewis, March 1989.
10. "Modelling Consideration of the Human Body in the Study of Locomotion," Rush Presbyterian & St. Luke's, January 1991.
11. "Dynamic Analysis of Articulated Flexible Structures". Air Force Office of Scientific Research. Dayton, Ohio, September 1991.
12. "Advanced Concepts in Human Body Modelling and Analysis," Zimmer, Indiana, April 1992.
13. "Computational Considerations in the Dynamics of Constrained Flexible Multibody Systems," NASA, NSF, DOD, Workshop, Santa Barbara, CA, August 1992.
14. "Spine Modelling in the Dynamics of Lifting and Human Body Vibration," Bioengineering Department, UIC, October 1992.
15. "Current Status of DARS and Vibration Control of Shafts with Time Variant Boundary Conditions", NASA-Lewis, December 1993
16. "Application of Multibody Systems Dynamics to Prototyping Developments in Computer Integrated Manufacturing (CIM)," Mechanical and Aerospace Engineering, University of Carleton, March 1994, Ottawa, Canada.
17. "Modelling, Dynamics and Control of Flexible Multibody Systems", Center for Intelligent Machines, McGill University, March 1994, Montreal, Canada.
18. "Modelling of Human Body - Vehicle System for Ride Comfort," Mechanical and Aerospace Engineering Department, Carleton University, Ottawa, Canada.
19. "Dynamic Analysis and Simulation of Heavy Vehicles-An Assessment of Vehicle Design and Pavement Damage," Water Resources and Management Workshop, October 16, 1994, Chicago, Illinois.
20. "Control Strategies in Seat Suspension Design for Ride Comfort and Vibration Control," Armstrong Laboratory Wright Patterson Air Force Base, Dayton, Ohio, August 1994.
21. "Seat suspension Design and Human body Vibration Control" SAE workshop on TOPEC, April 1996, Detroit, Michigan (**Guest Speaker**)
22. "Seat suspension Design and Human body Vibration Control", Delphi, General Motors Technical center, April 1996

23. "Active seat suspension and ride comfort", Ergonomics conference, April 1996 (**Guest speaker**)
24. "Dynamic and Modelling of flexible articulated structures" Aerospace and Applied Mechanics, Department, University of Cincinnati, January 1996.
25. "Vibration Control of Flexible Structures using of time -variant boundary conditions", Department of Mechanical Engineering, University of Iowa, 1996.
26. "Contact Analysis in Flexible Multibody Dynamics", Institute of Mechanics, Stuttgart, Germany, May 1998
27. "Computational Advantages in Multibody Dynamics", Institute of Mechanics, Stuttgart, Germany, May 1998
28. "Dynamic Interaction in Active Suspension Design and Human Body Vibration Control", TOPTEC98, Southfield, MI, 1998
29. Keynote speaker at the 3rd International Conference & Exhibition, *Engineering of Sport*, Sydney, Australia, June 2000
30. "Current Advances in Multibody Dynamics" Stanford University, March 1999
31. 4th International Conference on the Engineering of Sport, Kyoto, Japan, September 2002. (**Guest Speaker**)
32. University of Northern Illinois, Department of Mathematics, March, 2002
33. Department of Neurosurgery, UIC, October, 2002
34. Department of Orthopedics, UIC, April, 2000, 2001, 2002
35. Department of Bio-engineering, UIC, October, 2002
36. Department of Mechanical Engineering, UIC, March 2000
37. Department of Mechanical Engineering, Aston University, UK , Nov 2002
38. University of UTH , Zurich,Switzerland,1999
39. University of Lyon, France, 2002
40. DePuy orthopedics, Warsaw, IN, 2002
41. LMS (Luven), Belgium, 2001
42. DTI , Texas, 2000, 2001
43. World Congress and Exhibition on Intelligent Transportation System and Services, Madrid, Spain, October 2003.
44. Biomechanics of Human Joints- Department of Chemical Engineering, UIC 2004
45. Trends in Joints Replacements- A focus on Clinical Applications- Polytechnic of Turin Italy, 2004
46. Osteoporosis, bone growth and ageing- Unesco, Paris 2004
47. TKA balancing of the Soft Tissues- Itech , Chicago IL 2004
48. Health Monitoring as a Diagnostic Tool- Adventure Monitoring, Chicago IL 2004

49. ASME International Mechanical Engineering Conference and Exposition, Washington 2004
50. Orthopaedic Research Society, San Francisco 2004
51. World Academy of Technology, Budapest summer 2006, Biomechanics and Orthopedics where are the common grounds
52. National Academy of Science UC Irvine Nov 2006
53. Schlumberger Paris, Current state of the art in robotics and automation, Nov 2006
54. Schlumberger Research group , Boston, robotics and automation , July 2006
55. EGEISELEC, Dept of Orthopedics, Rouen, France, 2009
56. INSA Toulouse, Dpt of Mechanical Engineering, 2007 and 2008
57. UIUC, Dpt. of mechanical Engineering, April 2008
58. NIOSH, Pittsburgh, PA, 2008 and 2009
59. Cleveland Clinics, April 2007.
60. UIC, Dpt of Bioengineering 2008. 2009