

2099 Thunderhead Rd
Knoxville, TN 37922
mmahfouz@tech-mab.com

Home: 865-777-1747
Work: 877-725-6920
Fax: 865-974-6394

EDUCATION

- Ph.D. Systems Engineering, 2002, Colorado School of Mines, Colorado, USA
- M.S. Electrical Engineering, 1997, University of Denver, Colorado, USA
- M.S. Systems and Biomedical Engineering, 1992, Cairo University, Egypt
- B.S. Systems and Biomedical Engineering, 1987, Cairo University, Egypt

Dissertation

A New Registration Method for Implanted and Non Implanted Knee Joints Using Single Plane X-Ray Video Fluoroscopy.

Thesis

Computerized Radiotherapy Planning of Cancer of Cervix Uteri.

HONORS

- University of Tennessee College of Engineering Research Fellow, 2011
- Career Development Professor, College of Engineering, 2008-2013
- University of Tennessee College of Engineering Research Fellow, 2007
- B. Ray Thompson Sr. Professor in Mechanical Engineering Award, 2006
Mechanical, Aerospace, and Biomedical Engineering Department
- Biomedical Engineering Society Outstanding Paper Award
12th International Conference on Biomedical Engineering, Singapore, 2005
- Best Scientific Exhibit, American Academy of Orthopaedic Surgeons, Conference 2005.
Nicholson, Komistek, Mahfouz, Hamel, Sharma, "In Vivo Dynamics of Normal, Rotator Cuff Deficient, Total and Reverse Replacement Shoulders," exhibit, AAOS, Washington, DC, February 2005.
- Coventry Award for Outstanding Paper in Basic Science, The Knee Society.
Dennis, Komistek, Mahfouz, Haas, Stiehl: In Vivo Determination Of Knee Kinematics: A Multicenter Analysis Of 811 Total Knee Arthroplasty, 2002.

PROFESSIONAL ACTIVITIES

Memberships

- The Knee Society
- Institute of Electrical and Electronics Engineers (IEEE) Senior Member
 - IEEE Engineering in Medicine and Biology Society
 - IEEE Computer Society
 - IEEE Microwave Theory and Techniques Society
 - IEEE Communications Society
 - IEEE Signal Processing Society
 - IEEE Antennas and Propagation Society
 - IEEE Radio and Wireless Society
- Orthopaedic Research Society (ORS)
- American Association for the Advancement of Science (AAAS)
- International Society of Technology in Arthroplasty (ISTA)

Leadership and Activities

- Conference Chair, Technical Program Committee Chair, IEEE Topical Conference on Biomedical Radio and Wireless Technologies, Networks, and Sensing Systems, Santa Clara, California, 2012
- Conference Chair, Technical Program Committee Chair, IEEE Topical Conference on Biomedical Radio and Wireless Technologies, Networks, and Sensing Systems, Phoenix, Arizona, 2011
- Technical Program Committee, member, IEEE Radio and Wireless Symposium, 2010
- Technical Reviewer
 - Editorial Board Member, Journal of Arthroplasty
 - Editorial Board Member, Open Orthopaedics Journal
 - Reviewer of IEEE Microwave Theory and Techniques (MTT)
 - Reviewer of Journal of Biomechanics
 - Reviewer of Journal Clinical Biomechanics
 - Reviewer of IEEE Transactions on Medical Imaging
 - Reviewer Journal of BioSystems
- Department of Energy: Science Undergraduate Laboratory Internships: Research Mentor
 - 7 students, Summer 2004
- Member of the Scientific Program Committee of the Third Cairo International Biomedical Engineering Conference CIBEC'06.
- Chair of the committee of the active BME faculty to study and recommend renovations to both BME undergraduate and graduate curricula.
- Member of the search committee of the new BME faculty.
- Member of the search committee of the new ME faculty.
- Program Coordinator of the BME program.
- Member of Graduate Program Committee of MABE.
- National Science Foundation Proposal Review Panel Member, 2008

ACADEMIC EXPERIENCE

2012 - Present **Professor**, Tenured, Biomedical Engineering, University of Tennessee
Knoxville, TN

2008 – 2012 **Associate Professor**, Tenured, Biomedical Engineering, University of
Tennessee
Knoxville, TN

In 2008, I was honored to receive the distinguish title of Career Development Professor, a prestigious award only given to six up-and-coming elite faculty members annually across the whole University of Tennessee, Knoxville. That same year, I was also awarded a tenured professorship in the Mechanical, Aerospace, and Biomedical Engineering Departments. I continue to serve as the Biomedical Undergraduate Coordinator where I work with students and faculty to continually enhance the curriculum of the program. I also serve on the Graduate Programs Committee. My future goals are to help the University develop an internationally renowned Biomedical Engineering program. I also hope to establish a program that will attract the best graduate students and post-doctoral researchers to the University of Tennessee, Knoxville.

2004 – 2008 **Assistant Professor**, Biomedical Engineering, University of Tennessee
Knoxville, TN

Since my appointment in August 2004, I have successfully expanded my research program to support 29 graduate students (more than 4.5 million in external funding). Although my appointment initially was 50% at UT (until 2006), I developed 7 courses at the graduate level and 2 at the undergraduate level as my appointment changed to 90% at UT. In addition to growing the graduate and research program at MABE, I am chairing the committee to renovate both the BME undergraduate and graduate curricula. I updated and streamlined the undergraduate curriculum in 2006 by adding tracts and suitable technical electives in which students can specialize in particular areas such as biomedical sensing, biosystems and bioimaging. One of my immediate goals is to maximize teaching efficiencies by increasing the amount of integration in foundational courses across the ME, AE and BME courses such as basic instrumentation. My second major goal is to modify and revise the course offerings in the graduate program so that it has stronger correlation with our major research activities and future thrusts.

2003-2004 **Joint ORNL/UT Senior Research Scientist**
Oak Ridge, TN

My responsibilities include developing, directing and coordinating new research efforts for the ORNL/UT Center of Musculoskeletal Research CMR. In addition, promote and continue collaborative research between groups at ORNL that are interested in biomedical engineering research, University of Tennessee (UT), and industrial sponsors. Through my ties at both institutions, I have also been able to mentor 7 undergraduate students as part of the Department of Energy's Science Undergraduate Laboratory Internship (SULI).

- 2002 - 2003 **Research Professor**, Colorado School of Mines
Golden, CO
My responsibilities included developing new research efforts for Rocky Mountain Musculoskeletal Research Laboratory. Continue collaboration with research partners such as Colorado School of Mines, industrial partners in the NSF Intelligent Biomedical Devices and Musculoskeletal Systems IBDMS Center
- 1998-2001 **Research Assistant**, Colorado School of Mines
Golden, CO
- 1994-1997 **Research Assistant**, University of Denver
Denver, CO
- 1992-1994 **Instructor, Control Systems**, American University of Cairo
Cairo, Egypt

Teaching: Undergraduate

- BME 271 Introduction to Biomedical Engineering (1)
- BME 430 Bioinstrumentation Lab (4) (developed)
- BME 435 Bioinstrumentation (3)
- BME 455 Biomedical Engineering Design I (3)
- BME 469 Biomedical Engineering Design II (3)
- Chancellor's Summer Undergraduate Research Faculty Mentor (3 students)

Teaching: Graduate Courses (developed)

- BME 538/BME 610 Ultrasonic Methods and Bioinstrumentation (3)
- BME 599/548 Optimization Techniques Applied to Biomedical Engineering (3)
- BME 599/574 Multi-Dimensional Medical Image Analysis (3)
- BME 599/582 Microelectromechanical (MEMS) Systems in Biomedical Engineering (3)
- BME 599 Ultrasound Physics and Bioinstrumentation (3)
- BME/ECE 599 RF/Microwave Effects Biological Tissues (3)
- BME 599 Fundamentals of Microfabrication (3)
- BME 599 Advanced Engineering Mathematics (3)

- BME 610/ENGR SCI 581 Human Gross Anatomy (6)
- BME 674 Advanced Pattern Recognition in Medicine: A Neuro-Fuzzy Systems Approach (3) (developed for Spring 2009)
- BME 682 Biological Applications of Micro and Nanoscale Systems (3) (developed for Spring 2008)

Graduate Ph.D.

J. Michael Johnson, Ph.D., Analysis, Segmentation and Prediction of Knee Cartilage using Statistical Shape Models, Fall 2013.

Hatem El Dakhakhni, Ph.D., Reconstruction of Patient-Specific Bone Models from X-Ray Radiography, Fall 2013.

Joseph Mitchell, Ph.D., Discrete Geometric Based Stress Analysis of the Lumbar Soft Tissues From In Vivo Kinematics, Summer 2013.

Jon Huber, Ph.D., Mutual Capacitive Proximity and Pressure Sensing for Human Interactions, Spring 2013.

Emam ElHak Abdel Fatah, Ph.D., Three Dimensional Nonlinear Statistical Modeling Framework for Morphological Analysis, Fall 2012.

Gary To, Ph.D., Quaternionic Attitude Estimation with Inertial Measuring Unit for Robotic and Human Body Motion Tracking using Sequential Monte Carlo Methods with Hyper-Dimensional Spherical Distributions, Fall 2012.

Michael J. Kuhn, Ph.D., Development and Experimental Analysis of Wireless High Accuracy Ultra-Wideband Localization Systems for Indoor Medical Applications, Spring 2012.

Rimon A. M. Tadross, A Novel Imaging System for Automatic Real-Time 3D Patient-Specific Knee Model Reconstruction Using Ultrasound RF Data, Spring 2012.

Emily R. Pritchard, Ph.D., Polymeric Microsensors for Intraoperative Contact Pressure Measurement, Spring 2010.

Brandon Cole Merkl, Ph.D., The Future of the Operating Room: Surgical Preplanning and Navigation Using High Accuracy Ultra-Wideband Positioning and Advanced Bone Measurement, Fall 2008.

Mohammed Haider, Ph.D., System-on-Package Low-Power Telemetry and Signal Conditioning Until for Biomedical Applications, Fall 2008.

Boyd Evans III, Ph.D., MEMS Capacitive Strain Sensing Elements for Integrated TKA

Prosthesis Monitoring, Fall 2007.

Wenchao Qu, Ph.D. (Provided full financial support, Major Professor: Syed Islam), Design of a Cost-efficient Reconfigurable Pipeline ADC, Fall 2007.

Adam David Sylvester, Ph.D. (Provided full financial support, Major Professor: Andrew Kramer), The Decoupling Hypothesis: A New Idea for the Origin of Hominid Bipedalism, Summer 2006.

Graduate M.S.

Chad Seaver, M.S., An Implantable Low Pressure Biosensor Transponder, 2013.

Ali Mustafa, M.S., Automated Fragmentary Bone Matching, 2013.

Wesley Underwood, M.S., A Novel Free Form Femoral Cutting Guide, 2011.

Lindsey Hobdy, M.S., Non-Thesis Option, 2010.

Preston Kelly, M.S., Non-Thesis Option, 2009.

David Holmes, M.S., Non-Thesis Option, 2008.

Anes Aref, M.S., Non-Thesis Option, 2008.

Gary To, M.S., Development of the Telemetrical Intraoperative Soft Tissue Tension Monitoring System in Total Knee Replacement with MEMS and ASIC Technologies, 2007.

Shashank Karra, M.S., Vascular Hemodynamics CFD modeling, 2007.

Jennifer Lilly, M.S., Non-Thesis Option, 2007.

Lyndsay Smith, M.S., Non-Thesis Option, 2007.

Ravi Viswanathan, M.S., Inverse Problems in Image Processing: Blind Image Restoration, 2005.

Kanchana Jagannathan, M.S., Non-Thesis Option, 2005.

Sarath Kumar Dandala, M.S., Non-Thesis Option, 2005.

Chris L. Baker, M.S., Tomographic Imaging from X-ray Video Fluoroscopy, 2003.

Eric C. Berg, M.S., Interactive Deformable Segmentation Tools of Bones Using Magnetic Resonance Imaging and 3D to 3D New Elastic Registration Method, 2003.

Current Students

<i>Ph.D.</i>		Scheduled Graduation
Nicholas Battaglia	Ph.D. Biomedical Engineering	2014
Jing Wu	Ph.D. Biomedical Engineering	2014

Graduate Student National Awards

Natalie Langley, Ph.D. Candidate
National Institute of Justice Fellowship (NIJ) Grant # 2007-DN-BX-0004: "Determination of Age and Sex from the Human Clavicle: A Geometric Morphometric Approach"

Megan Moore, Ph.D. Candidate
National Institute of Justice Fellowship (NIJ) Grant # 2007-DN-BX-0013: "Body Mass Estimation from by Biomechanical and Morphometric Methods"

Emily Pritchard, Ph.D. Student
National Science Foundation Graduate Research Fellowship Award 2007

Post Doctorate

Adam David Sylvester, Ph.D.	2006-2007
Nazmul Islam, Ph.D.	Summer 2007

Graduate Students - Committee Member

Yazhou Wang, Ph.D., UWB Pulse Radar for Human Imaging and Doppler Detection Applications, 2012.

A.D. Haider, Ph.D. Electrical Engineering, 2011

Filip Leszko, Ph.D., Dynamics, Electromyography and Vibroarthrography as Non-Invasive Diagnostic Tools: Investigation of the Patellofemoral Joint, 2011.

John Mueller, Ph.D., Development of a Rigid Body Forward Solution Physiological Model of the Lower Leg to Predict Non Implanted and Implanted Knee Kinematics and Kinetics, 2011.

Quan Yuan, M.S., Optimization of Alternating Current Electrothermal Micropump by Numerical Simulation, Summer 2010.

Song Lin, Ph.D., Passive and Active Components Development for Broadband Applications, Spring 2009.

Natalie Renee Shirley, Ph.D., Age and Sex Estimation from the Human Clavicle: An Investigation of Traditional and Novel Methods, Spring 2009.

Adrija Sharma, Development of a Computational Model to Predict the In Vivo Contact Mechanics of Modern Total Knee Arthroplasty, Fall 2008.

Diana Andreeva Glaser, Development and Implementation of Mathematical Modeling, Vibration and Acoustic Emission Technique to Correlate In Vivo Kinematics, Kinetics and Sound in Total Hip Arthroplasty with Different Bearing Surfaces, Summer 2008.

Cemin Zhang, Ph.D., Hardware Development of an Ultra-Wideband System for High Precision Localization Applications, Fall 2008.

Megan Katrina Moore, Ph.D., Body Mass Estimation from the Human Skeleton, Spring 2008.

Prachya Mruetusatorn, M.S., Development of Gate-Controlled DC Electrokinetic Micropumps, Spring 2008.

Songnan Yang, Ph.D., Antennas and Arrays for Mobile Platforms – Direct Broadcast Satellite and Wireless Communication, Summer 2008.

Yunqiang Yang, Ph.D. Development of a Real-Time Ultra-Wideband See Through Wall Imaging Radar System, Summer 2008.

Sazia Afreen Eliza, Ph.D., Modeling of AlGaN/GaN High Electron Mobility Transistor for Sensors and High-Temperature Circuit Applications, Fall 2008.

Fei Liu, Ph.D., Theoretical Modeling and Experimental Validation of In Vivo Mechanics for Subjects Having Variable Cervical Spine Conditions, Fall 2007.

Anne Meredith Kroman, Ph.D., Fracture Biomechanics of the Human Skeleton, 2007.

Nazmul Islam, Ph.D., AC Electroosmosis for Lab-On-Chip Applications, 2007.

Abdullah Al Zaman, Ph.D., Muscle Fatigue Analysis Using Autoregressive Models, 2007.

Sangeetha Swaminathan, M.S., Fabrication of Nano-Injection Needles for Neural Pathway Study in Mice, 2007.

Joshua King, M.S., Bi-planar Image Registration and Modeling of Bones, 2007.

Marcel A. Grubert, Ph.D., Development of a Potentially Accurate and Efficient LES CFD Algorithm to Predict Heat and Mass Transport in Inhabited Spaces, 2006.

Sunil Sahu, Ph.D., A Theory for Modified Conservation Principles Optimization of CFD Algorithm Fidelity, 2006.

Arun Balasundaram, M.S., Study of Hydrogel Properties and Immobilization of a Bioluminescent Bioreporter, 2006.

Katherine S. Alford, M.S., Correlation of Wear and Mechanics for Subjects having a Metal on Polyethylene Total Hip Arthroplasty Measured in vivo, 2005.

Matthew Brennon-Kyle Kubo, M.S., A Computational Model to Predict in vivo Kinetics in Implanted and Non-Implanted Shoulders, 2005.

Adrija Sharma, M.S., A Method to Calculate the Femoro-Polyethylene Contact Pressures in Total Knee Arthroplasty in-vivo, 2005.

Joel Thomas Outten, M.S., Computational Model to Predict In Vivo Lower Limb Kinetics and Assess Total Knee Arthroplasty Design Parameters, 2005.

Joseph Scott Bader, M.S., Significance of Hip Separation in Metal on Polyethylene, Metal on Metal, and Ceramic on Ceramic THA Due to Resonant and Energy Dispersion Effects, 2005.

Shaun Kevin Stinton, M.S., Determination and Comparison of In Vivo Forces and Torques in Normal and Degenerative Lumbar Spines, 2005.

Abitha Sundararajan, M.S. Synthesis and Analysis of Anionic Hydrogel Scaffolds for Endothelial Cell Tissue Engineering, 2005.

Vijay Nandakumar, M.S., Real-Time Monitoring and Qualification of Drug Induced Changes in Endothelial Cytoskeleton Filaments Using a Cellular Impedance Biosensor, 2005.

Ram Pratap Gangadharan, M.S., Polyampholyte Hydrogel Characteristics and Detection of Bacterial Interactions with the Hydrogels Using Digital Imaging Processing Methods, 2005.

PATENTS & PATENT APPLICATIONS

Patent / Application Title	Country/Region	Publication Number	Serial Number	Issued Patent
In-vivo orthopedic implant diagnostic device for sensing load, wear, and infection	United States	US 7,097,662	10/926216	YES
In-vivo orthopedic implant diagnostic device for sensing load, wear, and infection	WIPO	WO 2006/098759	PCT/US05/030250	Pending
Methods of Predetermining the Contour of a Resected Bone Surface and Assessing the Fit of a Prosthesis on the Bone	United States	None	60/783,630	Pending
Methods of Predetermining the Contour of a Resected Bone Surface and Assessing the Fit of a Prosthesis on the Bone	United States	US 2007/0255288	11/685,906	Pending

Methods of Predetermining the Contour of a Resected Bone Surface and Assessing the Fit of a Prosthesis on the Bone	WIPO	WO 2007/109466	PCT/US07/06 3949	Pending
Smart joint implant sensors	United States	None	60/654,650	Pending
Smart joint implant sensors	United States	US 2008/0065225	11/890,307	Pending
Smart joint implant sensors	WIPO	WO 2006/089069	PCT/US06/00 5545	Pending
Smart joint implant sensors	Australia		PCT/US06/05 545	Pending
Smart joint implant sensors	Canada		2,598,391	Pending
Smart joint implant sensors	Europe		06720830.6	Pending
Smart joint implant sensors	Japan		2007/556305	Pending
Noninvasive Diagnostic System	United States	US 2010/0198067	12/364,267	Issued
Noninvasive Diagnostic System	WIPO	WO 2010/088696	PCT/US10/22 939	Pending
Implant Design Analysis Suite	United States	None	60/965,195	Pending
Implant Design Analysis Suite	United States	US 2011/0087465	12/673,640	Pending
Implant Design Analysis Suite	Europe	EP 2194879	8795415.2	Pending
Implant Design Analysis Suite	WIPO	WO 2009/025783	PCT/US08/00 9837	Pending
Implant Design Analysis Suite	Canada	CA 2,696,584	2,696,584	Pending
Implant Design Analysis Suite	Egypt	None	PCT/NA10/00 265	Pending
Novel Imaging System for a Patient-Specific 3D Knee Model Reconstruction Using Ultrasound	United States	None	61/369,848	Pending
Customized Orthopaedic Implants and Related Methods	United States	None	61/208,509	Pending
Customized Orthopaedic Implants and Related Methods	United States		13/203,012	Pending
Customized Orthopaedic Implants and Related Methods	WIPO	WO 2010/099359	PCT/US10/02 5466	Pending
Customized Orthopaedic Implants and Related Methods	China		N/A	Pending

Customized Orthopaedic Implants and Related Methods	Europe		PCT/US10/25466	Pending
Customized Orthopaedic Implants and Related Methods	Canada	CA2753488	CA20102753488	Pending
Customized Orthopaedic Implants and Related Methods	United States		13/203,010	Pending
Customized Orthopaedic Implants and Related Methods	WIPO	WO 2010/099360	PCT/US10/025467	Pending
Customized Orthopaedic Implants and Related Methods	China		PCT/US10/25467	Pending
Customized Orthopaedic Implants and Related Methods	Europe		PCT/US10/25467	Pending
Customized Orthopaedic Implants and Related Methods	Japan		PCT/US10/25467	Pending
Customized Orthopaedic Implants and Related Methods	Canada	CA2753485	CA20102753485	Pending
Methods of Detecting Breast Cancer Using UWB Imaging	United States	None	61/389,863	Pending
Minimally Invasive Total Spine Implant	United States	US 2010/0256761	12/417,950	Pending
Minimally Invasive Total Spine Implant	Canada		N/A	Pending
Minimally Invasive Total Spine Implant	Europe		10759462.4	Pending
Minimally Invasive Total Spine Implant	WIPO	WO/2010/115086	PCT/US10/29760	Pending

SPONSORED RESEARCH

Since arriving at the University of Tennessee, I have concentrated my efforts in a project titled “The Operating Room of the Future,” which uses sensing technologies in the area of computer assisted orthopedic surgery (CAOS) and implants. Using computerized analysis to assist surgical intervention; surgical navigation is on the forefront of medical research. In its various applications, the scope of my surgical navigation work combines different aspects of current medical technology, such as patient-specific models from biplanar static radiographs, ultra-wide band RF technology, and microelectromechanical (MEMS) systems to provide a promising aid to physicians of the future while integrating with commonly used surgical tools. Zimmer, Inc. funds my research in this area with a multi-million dollar contract(s) over the next few years. Cutting edge technology and solid scientific research have enabled me to bring a large amount of money and recognition to the University of Tennessee.

My work in *in vivo* fluoroscopy has enabled me to also earn international recognition for studying three-dimensional implant movement. My work in medical imaging gave me a strong foundation in funding early in my academic career and gave me the experience I now utilize in “The Operating Room of the Future.”

Part of my work in orthopaedic modeling included building a database of 3D patient-specific femur models that enabled automatic measurements to be made. These measurements were used to locate landmarks and calculate the axes necessary to optimize the bone cuts and implant fitting for total knee replacement surgery. In addition, I compared the 3D measurements of male femurs versus female femurs, finding many significant differences. The differences I quantified have been widely hailed as revolutionary to implant design and have played a large role in the design of a gender-specific knee implant.

2011 Total Grants Awarded: \$546,259.00

US Department of Justice - National Institute of Justice

Computerized Reconstruction of Fragmentary Skeletal Remains (Project Date: 2012-2013)

\$514,495.02 (PI)

National Institute of Health NIH award: 1R43AR060125-01A1

Inertial Motion Unit (IMU) Based Hip Navigation System (Project Date: 2012) \$31,764 (PI)

JointVue

In Vivo Joint Analysis of Rigid Body Sound Mechanics[¥] (Project Date: 2012-2013) \$125,000

Pending (PI)

2010 Total Grants Awarded: \$1,570,723.00

Joint Vue

In Vivo Joint Analysis of Rigid Body Sound Mechanics[¥] (Project Date: 2009-2010) \$500,000 (PI)

National Science Foundation, Electrical, Communications and Cyber Systems Division

Achieving Sub-MM Accuracy with a Novel Indoor UWB Positioning System in Dense Multipath Environments for Medical Applications (Project Date: 2010-) \$360,000 (PI)

Zimmer Orthopedics

Pelvic Landmarking \$119,448 (PI)

In Depth Understanding of Knee Mechanics \$42,463 (Co-PI)

In Vivo Determination of Gender Kinematics in TKA \$27,799 (Co-PI)

3D Mechanics Analysis of the Patellofemoral Joint \$33,571 (Co-PI)

In Vivo Mechanics Comparison of the Sigma Mobile Bearing vs. the Legacy High Flex Fixed Bearing TKA \$20,938 (Co-PI)

In Vivo Determination of Knee Kinematics in Obese Patients \$23,844 (Co-PI)

National Institute of Health – National Institute of Biomedical Imaging and Bioengineering

Innovative Tools for In Vivo Computational Prediction of Pre-and Post-Operative Lumbar Stresses (Project Date: 2008-2011) \$438,775 (Co-PI)
Wright Medical Technology, Inc.
In Vivo Mechanics Analysis for Subjects Having a Medial Pivot TKA or a Normal Knee (Project Date: 2008-2010) \$3,885 (Co-PI)

2009 Total Grants Awarded: \$972,085.00

US Department of Justice - National Institute of Justice
Improving Sex Estimation from Crania using 3-Dimensional CT Scans[‡] (Project Date: 2009-2010) \$167,278 (PI)
Improving Sex Estimation from Crania using 3-Dimensional CT Scans[‡] (Project Date: 2009-2010) \$171,215 (PI)
National Institute of Health – National Institute of Biomedical Imaging and Bioengineering
Innovative Tools for In Vivo Computational Prediction of Pre-and Post-Operative Lumbar Stresses (Project Date: 2008-2011) \$457,229 (Co-PI)
Tornier S.A.S.
Real Time Mechanics of Native Shoulders and Total Shoulder Athroplasties (Project Date: 2008-2010) \$176,363 (Co-PI)

2008 Total Grants Awarded: \$1,307,269.00

Medtronic
In Vivo Determination of 3D Kinematics for Subjects Having a Prestige Single Level Cervical Disk Replacement (Project Date: 2008-2009) \$236,197 (Co-PI)
National Institute of Health – National Institute of Biomedical Imaging and Bioengineering
Innovative Tools for In Vivo Computational Prediction of Pre-and Post-Operative Lumbar Stresses (Project Date: 2008-2011) \$458,213 (Co-PI)
Innovative Tools for In Vivo Computational Prediction of Pre-and Post-Operative Lumbar Stresses (Project Date: 2008-2011) \$424,188 (Co-PI)
Wright Medical Technology, Inc.
In Vivo Mechanics Analysis for Subjects Having a Medial Pivot TKA or a Normal Knee (Project Date: 2008-2009) \$188,671 (Co-PI)

2007 Total Grants Awarded: \$342,487.00

Zimmer Orthopedics
Development of a NURBS Bone Atlas for Gender Knee Project: Phase II Femoral and Tibial Bones \$38,752 (PI)
In Vivo Comparison of Male vs. Female TKA Kinematics (Project Date: 2007-2008) \$70,064 (Co-PI)
In Vivo Determination of Transfer Functions Across the Hip Joint (Project Date: 2007-2008) \$88,671 (Co-PI)
DePuy Orthopaedics
In Vivo Analysis of “New” Low Contact Stress Rotating Platform PS TKA (Project Date: 2007-2008) \$105,000 (Co-PI)
US Department of Justice - National Institute of Justice

Body Mass Estimation from the Human Skeleton[¥] \$20,000 (PI)
Determination of Age and Sex from the Human Clavicle: A Geometric Morphometric Approach[¥] \$20,000 (PI)

2006 Total Grants Awarded: \$3,130,647.00

Zimmer Orthopedics

Development of a NURBS Bone Atlas for Gender Knee Project: Phase II Femoral and Tibial Bones (Project Date: 2006-2007) \$153,675 (PI)
Completion of Bone Morphing, Bi-planar and Mechanic Axes Systems for Pre-Operative Planning Systems (Project Date: 2006-2007) \$263,669 (PI)
Analysis and Implementation of Knee Provisional, MEMS Spacer and Force Actuator Systems for Knee Implantation and Ligament Balancing (Project Date: 2006-2008) \$642,204 (PI)
Analysis of Intra-Operative Techniques and Devices Using RF Tracking and Ultrasound (Project Date: 2006-2008) \$691,791 (PI)
Analysis and Implementation of a RF Smart Implant System that can be used to Detect In Vivo Conditions (Project Date: 2006-2008) \$692,490 (PI)
In Vivo Early Post-Op Comparison of Hip Kinematics for Subjects Implanted Using MIS or Traditional Approach compared to the Normal Hip (Project Date: 2006-2008) \$118,844 (Co-PI)
In Vivo Comparison of TKA Kinematics to the Non-Implanted Contralateral Knee for the Same Subject (Project Date: 2006-2007) \$111,143 (Co-PI)

Smith and Nephew

In Vivo Comparison Study of Knee Kinematics for Subjects Implanted with a Renasys TKA (Project Date: 2006-2008) \$203,831 (PI)

OhioHealth Foundation

Donation \$50,000 (PI)

University of Tennessee College of Engineering

Implementation of Microfabrication/MEMS Lab in Undergraduate and Graduate Design Classes: Step II Photolithography Laboratory for MEMS Development \$203,000 (PI)

2005 Total Grants Awarded: \$1,380,941.04

DePuy Orthopaedics

Determination of Bone Geometry and Kinematics for Non-Implanted Subjects (Project Date: 2005-2007) \$306,438 (PI)
In Vivo Assessment of Hip Kinematics during Four Difficult Activities (Project Date: 2005-2006) \$159,370 (PI)
Determination of In Vivo Kinematics for Subjects Implanted with a Sigma RP Flex TKA: A Multicenter Analysis (Project Date: 2005) \$81,597 (Co-PI)

Zimmer Orthopedics

Development of a NURBS Bone Atlas: Phase I Femoral and Tibial Bones (Project Date: 2005-2006) \$280,225 (PI)

In Vivo Determination of UKA Kinematics, Implanted with an MIS Technique (Project Date: 2005-2006) \$120,966 (Co-PI)

In Vivo Determination of TKA and THA Dynamics (Project Date: 2005-2006) \$74,913 (Co-PI)

In Vivo Comparison Study of Zimmer High Flex PCR vs. High Flex PS TKA into Deep Flexion (Project Date: 2003-2005) \$72,438 (Co-PI)

Archus Orthopaedics

Donation \$100,000 (PI)

Rocky Mountain Musculoskeletal Research Laboratory

Donation \$106,494.04 (PI)

University of Tennessee, College of Engineering

Implementation of MEMS Characterization Lab in Undergraduate and Graduate Design Classes \$78,500 (PI)

2004 Total Grants Awarded: \$353,577 (August hire at UT)

Zimmer, Inc.

Vivo Comparison Study of Knee Kinematics for Subjects Implanted Using a Standard Surgical Technique and the Minimally Invasive Technique (2003-2004) \$194,539 (Co-PI)

DJ Orthopedics

In Vivo Determination of 3D Kinematics for an ACL Deficient Knees with & without a Brace \$84,000 (Co-PI)

Centerpulse Spine-Tech, Inc.

In Vitro 3D Kinematic Analysis of the DYNESYS Implant (Project Date: 2003-2006) \$75,038 (Co-PI)

2003 Total Grants Awarded: \$187,541.50

DePuy Orthopaedics Inc., A Johnson and Johnson Company

Interactive Segmentation Tools for Bones Using Magnetic Resonance Imaging \$81,300.74 (PI)

A Finite Element Model of the Human Semimembranosus Muscle Using Linear Elastic Homogenous Solids from MR Data \$106,240.74 (PI)

2002 Total Grants Awarded: \$342,000.00

Colorado Alliance for Bioengineering (CAB) & Colorado Commission on Higher Education (CCHE)

Tomographic Imaging from Fluoroscopic Video \$59,000 (PI)

DePuy Orthopaedics, A Johnson and Johnson Company

Interactive Segmentation Tools of Bones Using Magnetic Resonance Imaging \$78,000 (PI)

Archus Orthopedics Inc.

In Vivo 3D Kinematic Analysis of the Lumbar Spine \$76,000 (PI)

Zimmer, Inc.

Development of a Mathematical Model to Determine In Vivo Shoulder and Elbow Forces/Torques for Subjects \$129,000 (PI)

1. Rotator cuff tear without an implant.
2. Rotator cuff tear with a “reverse articulation” prosthesis.
3. Normal shoulder without an implant.
4. Implanted shoulder with a Zimmer primary shoulder prosthesis.

2001 Total Grants Awarded: \$120,000

NSF Intelligent Biomedical Devices and Musculoskeletal Systems IBDMS

Accuracy Analysis of a 3D-to-2D Registration System \$60,000 (PI)

Muscle Simulation for Musculoskeletal Analysis \$60,000 (PI)

PROFESSIONAL EXPERIENCE

- 2012-present: Chair, Career Development Professor, Professor, Program Coordinator of Biomedical Engineering and Center Co-Director Center for Musculoskeletal Research, Knoxville, TN
- 2008-2012: Chair, Career Development Professor, Associate Professor, Program Coordinator of Biomedical Engineering and Center Co-Director Center for Musculoskeletal Research, Knoxville, TN
- 2004-2008: Assistant Professor, Program Coordinator of Biomedical Engineering and Center Co-Director Center for Musculoskeletal Research, Knoxville, TN
- 2003-2004: Senior Research Scientist and Center Co-Director of joint University of Tennessee / Oak Ridge National Laboratory Center for Musculoskeletal Research, Knoxville, TN
- 1999-2003: Director, RMMRL – Rocky Mountain Musculoskeletal Research Laboratory, Denver, CO
- 1997-1999: Project Engineering Manager, Raytheon – Automated Systems. Division, Englewood, CO
- 1995-1997: I/T Architect, IBM – International Business Machines Corporation, Denver, CO
- 1990-1994: Senior Software Engineer, AL EMARA Consult. Services.-Medical Information Systems, Cairo, Egypt
- 1988-1990: Systems Engineer, National Research Center of Egypt, Cairo, Egypt
- 1987-1988: Biomedical Engineer, Biomedical Consulting Group, Cairo, Egypt

BOOK CHAPTERS

1. **Mahfouz, Kuhn, To**, “The Future of Ultra Wideband Systems in Medicine: Orthopedic Surgical Navigation,” Novel Applications of the UWB Technologies, Intech, ISBN: 978-953-307-324-8, 2011.

2. **Mahfouz**, “Three-Dimensional Morphology of the Knee,” *Surgery of the Knee*, Norman Scott (Ed.). Scheduled publication date: 2011
3. Shirley, Abdel Fatah, **Mahfouz**, “Beyond Black and White: Human Biological Affinity in Forensic Contexts,” *Beyond the Cranium: Ancestry Estimation from the Femur and Tibia*, Edited by GE Berg and SC Ta’ala. Scheduled publication date: 2010.
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5. Komistek, Dennis, **Mahfouz**, *Surgery of the Knee*, Norman Scott (Ed.), “Fluoroscopic Analysis of Total Knee Replacement,” vol. 2, ch. 89, pp. 1592-1612, 2006.
6. *Orthopaedic Knowledge Update: Hip and Knee Reconstruction 3*. Barrack, Booth, Lonner, McCarthy, Mont, Rubash (Eds.), “Biomechanics of the Knee,” Komistek, **Mahfouz**, Dennis, ch. 2, pp. 17-29, 2005.
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11. *Biomechanics*. Komistek, **Mahfouz**, Dennis, “Orthopaedic Knowledge Update: Hip and Knee Reconstruction,” 2003.
12. *The Adult Knee*. Callaghan, Rubash, Simonian, and Wickiewicz, “Kinematics of the Knee (stable, unstable, and arthroplasty),” Komistek, Dennis, and **Mahfouz**, Lippincott, Williams and Wilkins, Philadelphia, 2001.

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1. Cheng, Carr, Wong, Sharma, Mahfouz, Komistek, “Altered Spinal Motion in Low Back Pain Associated with Lumbar Strain and Spondylosis,” *Evid Based Spine Care J*, vol. 4, pp. 6-12, 2013.

2. Battaglia, **Mahfouz**, Johnson, Komistek, Cheng, "Noise Reduction of MR Images Using Intensity Inhomogeneity for Bias Guided Anisotropic Diffusion," *IEEE Transactions on Medical Imaging*, 2012. (submitted)
3. Abdel Fatah, Shirley, Jantz, **Mahfouz**, "Improving Sex Estimation from Crania Using a Novel Three-dimensional Quantitative Method," *Journal of Forensic Science*, 2012. (accepted)
4. To, **Mahfouz**, "Quaternionic Attitude Estimation for Robotic and Human Motion Tracking Using Sequential Monte Carlo Methods with von Mises-Fisher and Non Uniform Densities Simulations," *IEEE Transactions on Biomedical Engineering*, vol.60, no.11, pp.3046-3059, 2013
5. Johnson, **Mahfouz**, Battaglia, Sharma, Cheng, Komistek, "Clinical and Statistical Correlation of Various Lumbar Pathological Conditions," *Journal of Biomechanics*, vol. 46, no. 2, pp. 683-688, 2013.
6. Abdel Fatah, Shirley, **Mahfouz**, Auerbach, "A Three-dimensional Analysis of Bilateral Directional Asymmetry in the Human Clavicle," *American Journal of Physical Anthropology*, vol. 149, no. 4, pp. 547-59, 2012.
7. Parratte, Leszko, Zingde, Anderle, **Mahfouz**, Komsitek, Argenson, "In Vivo Comparative Kinematic Analysis of TKA Versus the Non-Implanted Contralateral Knee for the Same Subject," *Journal of Bone and Joint Surgery (Br)*, vol. 94-B supplement XL, pp. 137, 2012.
8. **Mahfouz**, Abdel Fatah, Bowers, Scuderi, "Three-dimensional Morphology of the Knee Reveals Ethnic Differences," *Clinical Orthopaedics and Related Research*, vol. 470, no. 1, pp. 172-85, 2011.
9. **Mahfouz**, To, Kuhn, "No Strings Attached," *IEEE Microwave Magazine*, vol. 12, no. 7, pp. S34-S48, 2011.
10. Sylvester, **Mahfouz**, Kramer, "The Effective Mechanical Advantage of A.L. 129-1a for Knee Extension," *The Anatomical Record*, vol. 294, no. 9, pp. 1486-1499, 2011.
11. Pal, **Mahfouz**, Komistek, Rullkoetter, "Comparison of In Vivo Contact Positions for PS and PCR TKA Implants Using Lowest Point and Full-Contact Techniques," *International Journal of Biomedical Engineering and Technology*, vol. 5, no. 2-3, pp. 229-246, 2011.
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13. Blumenfeld, Glaser, Bargar, Langston, **Mahfouz**, Komistek, "In Vivo Assessment of Total Hip Femoral Head Separation from the Acetabular Cup During 4 Common Daily Activities," *Orthopedics*, vol. 34, no. 6, p. 127, 2011.

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15. Glaser, Komistek, Cates, **Mahfouz**, "A Non-Invasive Acoustic and Vibration Analysis Technique for Evaluation of Hip Joint Conditions," *Journal of Biomechanics*, vol. 43, no. 3, pp. 426-432, 2010.
16. Kuhn, **Mahfouz**, Zhang, Merkl, Fathy, "A System Level Simulation Framework for UWB Localization," *IEEE Transactions on Microwave Theory and Techniques*, vol. 58, no. 12, pp. 3527-3537, 2010.
17. Haider, Islam, **Mahfouz**, "Power-efficient Injection-locked Oscillator for Biomedical Telemetry," *Electronic Letters*, vol. 46, no. 18, pp. 1252-1254, 2010.
18. Qu, Islam, **Mahfouz**, Haider, To, Mostafa, "Microcantilever Array Pressure Measurement System for Biomedical Instrumentation," *IEEE Sensors Journal*, vol.10, no. 2, pp. 321-330, 2010.
19. Zhang, Kuhn, Merkl, Fathy, **Mahfouz**, "Real-Time Noncoherent UWB Positioning Radar with Millimeter Range Accuracy in a 3D Environment: Theory and Experiment," *IEEE Transactions on Microwave Theory and Techniques*, vol. 58, no. 1, pp. 9-20, 2010.
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21. Leszko, Sharma, Komistek, **Mahfouz**, Cates, Scuderi, "Comparison of In Vivo Patellofemoral Kinematics for Subjects Having High Flexion Total Knee Arthroplasty Implant With Patients Having Normal Knees," *Journal of Arthroplasty*, vol. 25, no. 3, pp. 398-404, 2010.
22. **Mahfouz**, Abdel Fatah, Merkl, Mitchell, "Automatic and Manual Methodology for 3-Dimensional Measurements of Distal Femoral Gender Differences and Femoral Component Placement," *Journal of Knee Surgery*, vol. 22, no. 4, pp. 294-304, 2009.
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24. **Mahfouz**, Kuhn, To, Fathy, "Integration of UWB and Wireless Pressure Mapping in Surgical Navigation," *IEEE Transactions on Microwave Theory and Techniques*, vol. 57, no. 10, pp. 2550-2564, 2009.

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33. Olama, Li, Fathy, Djouadi, **Mahfouz**, "UWB Indoor Wireless Channel Modeling and Estimation from Experimental Measurements," *Research Letters in Signal Processing*, 2008.
34. Glaser, Dennis, Komistek, Miner, **Mahfouz**, "In Vivo Comparison of Hip Mechanics for Minimally Invasive Versus Traditional Hip Arthroplasty," *Journal of Clinical Biomechanics*, vol. 23, no. 2, pp. 127-134, 2008.
35. Cates, Komistek, **Mahfouz**, Schmidt, Anderle, "In Vivo Comparison of Knee Kinematics for Subjects Having Either a Posterior Stabilized or Cruciate Retaining High-Flexion Total Knee Arthroplasty," *Journal of Arthroplasty*, vol. 23, no. 7, pp. 1057-1067, 2008.
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38. Leszko, Sharma, Komistek, **Mahfouz**, Cates, Scuderi, “Comparison of Patellofemoral Kinematics for Subjects Having High Flexion TKA with Patients Having Normal Knees,” *Journal of Arthroplasty*, 2007.
39. Sharma, Leszko, Komistek, **Mahfouz**, Scuderi, Cates, “In-vivo Patellofemoral Forces in High Flexion Total Knee Arthroplasty,” *Journal of Biomechanics*, vol. 41, no. 3, pp. 642-648, 2007.
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55. Lee, Matsui, Kurosaka, Komistek, **Mahfouz**, Dennis, Yoshiya, "A Posterior-Stabilized Total Knee Arthroplasty Shows Condylar Lift-off during Deep Knee Bends," *Clinical Orthopaedics and Related Research*, vol. 435, pp. 181-184, 2005.
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CONFERENCE PODIUM PRESENTATIONS (FULL PAPER REVIEW)

1. Wong, Carr, Sharma, **Mahfouz**, Komistek, Cheng, “Altered Spinal Motion in Low Back Pain Associated with Lumbar Strain and Spondylosis,” Scientific Session: Mechanobiological Study of the Intervertebral, Global Spine Congress, Hong Kong, 2013.
2. To, **Mahfouz**, “Modular Wireless Inertial Trackers for Biomedical Applications,” IEEE Radio Wireless Week, Austin, TX, 2013. (spring)
3. **Mahfouz**, Kuhn, To, “Wireless Medical Devices: A Review of Current Research and Commercial Systems,” IEEE Topical Conference on Biomedical Radio and Wireless Technologies, Networks, and Sensing Systems, Austin, TX, 2013. (spring)
4. Elkhoully, Rowe, Fathy, Kuhn, **Mahfouz**, “Precise Indoor Localization Systems: Alternative Methods for Sub-sampling UWB Pulses and Associated Error Sources,” IEEE Topical Conference on Biomedical Radio and Wireless Technologies, Networks, and Sensing Systems, Austin, TX, 2013. (spring)

5. Rowe, Fathy, Kuhn, **Mahfouz**, “A UWB Transmit-Only Based Scheme for Multi-tag Support in a Millimeter Accuracy Localization System,” IEEE Radio and Wireless Symposium, Austin, TX, 2013. (spring)
6. To, **Mahfouz**, “Design of Wireless Inertial Trackers for Human Joint Motion Analysis,” IEEE Topical Conference on Biomedical Wireless Technologies, Network, and Sensing Systems, Santa Clara, CA, 2012. (spring)
7. **Mahfouz**, To, Kuhn, “Smart Instruments: Wireless Technology Invades the Operating Room,” IEEE Topical Conference on Biomedical Wireless Technologies, Network, and Sensing Systems, Santa Clara, CA, 2012. (spring)
8. Kuhn, **Mahfouz**, Rowe, Elkhoully, Turnmire, Fathy, “Ultra Wideband 3-D Tracking of Multiple Tags for Indoor Positioning in Medical Applications Requiring Millimeter Accuracy,” IEEE Topical Conference on Biomedical Wireless Technologies, Network, and Sensing Systems, Santa Clara, CA, 2012. (spring)
9. Elkhoully, Liu, Kuhn, **Mahfouz**, Fathy,⁴ “A Study of the Effect of Jitter on UWB System Positioning Accuracy,” IEEE Radio and Wireless Symposium, Santa Clara, CA, 2012. (spring)
10. Zingde, Leszko, Sharma, **Mahfouz**, Dennis, Komistek, “In Vivo Determination of the Cam-Post Engagement in Fixed and Mobile Bearing TKA,” The Knee Society Members Meeting, Garden City, NY, 2012. (fall)
11. Sharma, Dennis, Zingde, Mahfouz, Komistek, “Femoral Condylar Contact Points Start and Remain Posterior in High Flexion Patients,” The Knee Society Members Meeting, Garden City, NY, 2012. (fall)
12. Carr, Sharma, Smith, Cheng, **Mahfouz**, Komistek, “A Computational Model to Determine Vertebral Joint Forces in the Implanted and Non-Implanted Lumbar Spine,” 25th Annual Congress of the International Society for Technology in Arthroplasty, Sydney, Australia, 2012.
13. Mitchell, **Mahfouz**, Komistek, Cheng, Abdel Fatah, “Motion-Based Linear Stress Analysis of the Lumbar Intervertebral Discs,” 25th Annual Congress of the International Society for Technology in Arthroplasty, Sydney, Australia, 2012.
14. Zingde, Leszko, Sharma, Grieco, **Mahfouz**, Dennis, Komistek, “3D In Vivo Patellofemoral Kinematics for Implanted and Non-Implanted Knees,” 25th Annual Congress of the International Society for Technology in Arthroplasty, Sydney, Australia, 2012.
15. De Bock, Anderle, Dennis, **Mahfouz**, Komistek, “In Vivo Kinematics for Subjects Implanted with a Fixed or Mobile Bearing Revision TKA,” 25th Annual Congress of the International Society for Technology in Arthroplasty, Sydney, Australia, 2012.

16. De Bock, Zingde, Leszko, Tesner, Wasielewski, **Mahfouz**, Komistek, "Vibroarthography of the Knee Joint: A Comprehensive Gui-Based Analysis of Soft Tissue Damage," 25th Annual Congress of the International Society for Technology in Arthroplasty, Sydney, Australia, 2012.
17. Tadross, **Mahfouz**, "A Novel Technique for Knee Kinematics Teaching Using A-Model Ultrasound: Simulation and Feasibility Study," 24th Annual Congress of the International Society for Technology in Arthroplasty, Bruges, Belgium, 2011.
18. Tadross, **Mahfouz**, Wasielewski, "Automatic Real-Time Reconstruction of Patient-Specific 3D Knee Modeling Using Ultrasound RF Data," 24th Annual Congress of the International Society for Technology in Arthroplasty, Bruges, Belgium, 2011.
19. Carr, Sharma, **Mahfouz**, Komistek, "The Impact of Low Back Pain and Degeneration on the Coupled Out-of-Plane Rotations in the Lumbar Spine," 24th Annual Congress of the International Society for Technology in Arthroplasty, Bruges, Belgium, 2011.
20. Parratte, Leszko, Zingde, Anderle, **Mahfouz**, Komistek, Argenson, "In Vivo Comparative Kinematic Analysis of TKA versus the Non-Implanted Contralateral Knee for the Same Subject," 24th Annual Congress of the International Society for Technology in Arthroplasty, Bruges, Belgium, 2011.
21. Meccia, Spencer, Zingde, Sharma, Leszko, **Mahfouz**, Komistek, "Real-time Mechanics of Native Shoulder and Total Shoulder Arthroplasties," 24th Annual Congress of the International Society for Technology in Arthroplasty, Bruges, Belgium, 2011.
22. Tadross, **Mahfouz**, Caldwell, Badawi, Jantz, "Gender Classification from Fingerprints Using White Lines and Ridge Density," Biomedical Engineering Society Annual Meeting, Hartford, CT, 2011.
23. Meccia, Spencer, Zingde, **Mahfouz**, Komistek, "Glenohumeral Kinematics for Healthy, Osteoarthritic, and Postoperative Shoulders," Biomedical Engineering Society Annual Meeting, Hartford, CT, 2011.
24. **Mahfouz**, Battaglia, Abdel Fatah, Zingde, Komistek, "Total Knee Replacement Implant Classification Using Neural Networks," 78th Annual Meeting of the American Academy of Orthopaedic Surgeons, San Diego, CA, 2011.
25. **Mahfouz**, Kuhn, "UWB Channel Measurements and Modeling for Positioning and Communications Systems in the Operating Room," IEEE Topical Conference on Biomedical Radio and Wireless Technologies, Networks, and Sensing Systems, Phoenix, AZ, 2011.

26. Kuhn, **Mahfouz**, Wang, Turnmire, Fathy, "Towards Sub-Millimeter Accuracy in UWB Positioning for Indoor Medical Environments," IEEE Topical Conference on Biomedical Radio and Wireless Technologies, Networks, and Sensing Systems, Phoenix, AZ, 2011.
27. Kuhn, **Mahfouz**, Turnmire, Wang, Fathy, "A Multi-Tag Access Scheme for Indoor UWB Localization Systems used in Medical Environments," IEEE Topical Conference on Biomedical Radio and Wireless Technologies, Networks, and Sensing Systems, Phoenix, AZ, 2011.
28. Wang, Fathy, **Mahfouz**, "UWB Microwave Imaging System with a Novel Calibration Approach for Breast Cancer Detection," IEEE Topical Conference on Biomedical Radio and Wireless Technologies, Networks, and Sensing Systems, Phoenix, AZ, 2011.
29. Haider, Zhu, Islam, Yuan, **Mahfouz**, "Phase Noise Optimization of a Self-Cascode VCO by Changing the Capacitor Ratio and Substrate Bias," IEEE Topical Conference on Biomedical Radio and Wireless Technologies, Networks, and Sensing Systems, Phoenix, AZ, 2011.
30. Shirley, Abdel Fatah, Jantz, **Mahfouz**, "Improving Sex Estimation from the Human Cranium Using 3D CT Scans," Annual Meeting of the American Academy of Forensic Sciences, Chicago, IL, 2011.
31. Wood, Jantz, Jantz, Mahfouz, Abdel Fatah, "Improving Forensic Facial Reproductions Using Empirical Modeling," Annual Meeting of the American Academy of Forensic Sciences, Chicago, IL, 2011.
32. **Mahfouz**, Scuderi, Abdel Fatah, Bowers, "Three-Dimensional Morphology of the Knee, an Ethnic Study," Knee Society Members Meeting, Rochester, MN, 2010.
33. Leszko, Zingde, **Mahfouz**, Komistek, Douglas, "In-Vivo Cam-Post Engagement in Fixed and Mobile-Bearing TKA," Knee Society Members Meeting, Rochester, MN, 2010.
34. Mostafa, Qu, Islam, **Mahfouz**, "A Calibration Circuit for Reconfigurable Smart ADC for Biomedical Signal Processing," IEEE Computer Society Annual Symposium on VLSI, Lixouri Kefalonia, Greece, 2010.
35. Kuhn, Awida, **Mahfouz**, Fathy, "Open-Ended Coaxial Probe Measurements for Breast Cancer Detection," IEEE Radio and Wireless Symposium, New Orleans, LA, 2010.
36. Wang, Kuhn, **Mahfouz**, Fathy, "A Comprehensive System-Level Simulation Paradigm for UWB Systems," IEEE AP-S International Symposium, Toronto, Canada, 2010.
37. Fathy, **Mahfouz**, Wang, Kuhn, Turnmire, "UWB Technology for Precise Indoor Positioning and See Through Wall Imaging Applications," IEEE MTT-S International Symposium Workshop, Anaheim, CA, 2010.

38. Anderle, Zingde, Komistek, Dennis, **Mahfouz**, “Body Mass Index Comparison of Femorotibial Translation for Obese, Overweight, and Normal Weight TKA Subjects,” 77th Annual Meeting of the American Academy of Orthopaedic Surgeons, New Orleans, LA, 2010.
39. Zingde, Leszko, Komistek, Wasielewski, Argenson, **Mahfouz**, “Correlation of 3D In Vivo Kinematics and Vibroarthrography Data in the Knee Joint,” 77th Annual Meeting of the American Academy of Orthopaedic Surgeons, New Orleans, LA, 2010.
40. Leszko, Komistek, **Mahfouz**, “In Vivo 3D Determination of the Patellar Ligament Moment Arm,” 56th Annual Meeting of the Orthopaedic Research Society, New Orleans, LA, 2010.
41. Leszko, Zingde, Argenson, **Mahfouz**, Komistek, “Correlation of In Vivo Patellofemoral Kinematics with Sound Data for TKA and Non-Implanted Knees,” 56th Annual Meeting of the Orthopaedic Research Society, New Orleans, LA, 2010.
42. Leszko, Zingde, Carr, **Mahfouz**, Komistek, “In Vivo Determination of the Cam-Post Engagement in PS Mobile-Bearing TKA,” 56th Annual Meeting of the Orthopaedic Research Society, New Orleans, LA, 2010.
43. Anderle, Zingde, Komistek, Dennis, **Mahfouz**, “Tibio-Femoral Translation Comparison for Obese, Overweight and Normal Weight TKA Subjects,” 56th Annual Meeting of the Orthopaedic Research Society, New Orleans, LA, 2010.
44. Zingde, Leszko, Komistek, Wasielewski, Argenson, **Mahfouz**, “In Vivo Assessment of 3D Kinematics and Sound of the Knee Joint for Subjects with Various Articular Cartilage Conditions,” 56th Annual Meeting of the Orthopaedic Research Society, New Orleans, LA, 2010.
45. Zingde, Leszko, Mueller, Barnett, Komistek, **Mahfouz**, “In Vivo Determination of the Cam-Post Engagement in Bi-Cruciate Stabilizing TKA,” 56th Annual Meeting of the Orthopaedic Research Society, New Orleans, LA, 2010.
46. Delport, Anderle, Komistek, **Mahfouz**, Barrett, Ho, “In Vivo Determination of Hip Kinematics for Subjects Implanted Using Two Different Hip Resurfacing Systems,” 56th Annual Meeting of the Orthopaedic Research Society, New Orleans, LA, 2010.
47. Zingde, Mueller, Anderle, Komistek, MacNaughton, **Mahfouz**, “In Vivo Comparison of TKA Kinematics for Subjects with a PS, PCR or Bi-Cruciate Stabilizing Design”, 76th Annual Meeting of the American Academy of Orthopaedic Surgeons, Las Vegas, NV, 2009.

48. Mueller, Victor, Bellemans, Nadaud, Komistek, **Mahfouz**, Anderle, "In Vivo Determination of Knee Kinematics for Subjects Implanted with a Bi-Cruciate Stabilizing TKA," 55th Annual Meeting of the Orthopaedic Research Society, Las Vegas, NV 2009.
49. Zingde, Sharma, Komistek, Dennis, **Mahfouz**, "In Vivo Comparison of Axial Rotation for 2000 Non-Implanted and Implanted Knees", 55th Annual Meeting of the Orthopaedic Research Society, Las Vegas, NV, 2009.
50. Zingde, Glaser, Komistek, Garino, Hozack, Dennis, **Mahfouz**, "In Vivo Determination and Correlation of Kinematics and Sound for Subjects Having Two Different Ceramic-on-Ceramic THA", 55th Annual Meeting of the Orthopaedic Research Society, Las Vegas, NV, 2009.
51. **Mahfouz**, "Healthcare Trends and 21st Century Technologies in the Orthopaedics Industry," 22nd Annual Congress of the International Society for Technology in Arthroplasty, Waikoloa, HI, 2009.
52. Haas, Mueller, Dowd, Komistek, Anderle, **Mahfouz**, "A Multicenter Study of In Vivo Kinematics of a Rotating Platform Posterior Stabilizing TKA Designed to Reduce Contact Stresses," 22nd Annual Congress of the International Society for Technology in Arthroplasty, Waikoloa, HI, 2009.
53. Johnson, **Mahfouz**, "Automatic Segmentation of Osteoarthritic Knee Joints in CT Volumes Using Statistical Bone Atlases," 22nd Annual Congress of the International Society for Technology in Arthroplasty, Waikoloa, HI, 2009.
54. Tadross, **Mahfouz**, "Intraoperative Reconstruction of Patient-Specific 3D Knee Model for Total Knee Arthroplasty," 22nd Annual Congress of the International Society for Technology in Arthroplasty, Waikoloa, HI, 2009.
55. Kuhn, **Mahfouz**, Anderle, Komistek, Dennis, Nachtrab, "Comparison of Osteoarthritic Knee Patients Analyzed In Vivo With and Without a Knee Brace During Step Up and Step Down Activities," 22nd Annual Congress of the International Society for Technology in Arthroplasty, Waikoloa, HI, 2009.
56. Kuhn, **Mahfouz**, "Wireless Signal Propagation in the Operating Room and its Implications on Surgical Navigation, Digital Communication, and Smart Surgical Tools," 22nd Annual Congress of the International Society for Technology in Arthroplasty, Waikoloa, HI, 2009.
57. **Mahfouz**, Kuhn, "Development and Integration of Ultra-wideband Technology for Computer-assisted Orthopaedic Surgery," 22nd Annual Congress of the International Society for Technology in Arthroplasty, Waikoloa, HI, 2009.

58. El Dakhakhni, **Mahfouz**, "Patient-Specific 3-D Bone Model Reconstruction From X-ray Fluoroscopy," 22nd Annual Congress of the International Society for Technology in Arthroplasty, Waikoloa, HI, 2009.
59. To, **Mahfouz**, "Motion Tracking Using Miniature Wireless MEM Inertial Motion Sensing Unit," 22nd Annual Congress of the International Society for Technology in Arthroplasty, Waikoloa, HI, 2009.
60. Pritchard, **Mahfouz**, "Wireless Ground Reaction Forces and Locations Across the Foot Using In-Shoe MEMS Pressure Sensors," 22nd Annual Congress of the International Society for Technology in Arthroplasty, Waikoloa, HI, 2009.
61. Zingde, Leszko, Komistek, **Mahfouz**, Wasielewski, Argenson, "In Vivo Assessment of 3D Kinematics and Sound of the Knee Joint for Subjects with Various Articular Cartilage Conditions," 22nd Annual Congress of the International Society for Technology in Arthroplasty, Waikoloa, HI, 2009.
62. Leszko, Hovinga, **Mahfouz**, Lerner, Anderle, Barrett, Ho, "In Vivo Determination of Hip Kinematics: Is Gender an Influencing Factor?" 22nd Annual Congress of the International Society for Technology in Arthroplasty, Waikoloa, HI, 2009.
63. Abdel Fatah, **Mahfouz**, "Knee Cartilage Modeling and its Effects on the Accuracy of Surgical Landmarks Identification," 22nd Annual Congress of the International Society for Technology in Arthroplasty, Waikoloa, HI, 2009.
64. Pritchard, **Mahfouz**, "Wireless MEMS Sensors for Ligament Balancing in Total Knee Arthroplasty," 22nd Annual Congress of the International Society for Technology in Arthroplasty, Waikoloa, HI, 2009.
65. Zingde, Leszko, Komistek, Garino, Hozack, Dennis, **Mahfouz**, "In Vivo Determination and Correlation of Kinematics and Sound for Subjects Having Four Different Ceramic-on-Ceramic THA," 22nd Annual Congress of the International Society for Technology in Arthroplasty, Waikoloa, HI, 2009.
66. Glaser, Dennis, Komistek, Deaderick, **Mahfouz**, "In Vivo Assessment of Hip Kinematics in THA Patients with Various Bearing Surfaces: A Multi-Center Study," 22nd Annual Congress of the International Society for Technology in Arthroplasty, Waikoloa, HI, 2009.
67. Anderle, Zingde, Komistek, Dennis, **Mahfouz**, "Body Mass Index Comparison of Knee Kinematics for Obese, Overweight and Normal Weight TKA Subjects," 22nd Annual Congress of the International Society for Technology in Arthroplasty, Waikoloa, HI, 2009.

68. Leszko, Zingde, Argenson, **Mahfouz**, Komistek, "Correlation of 3D In Vivo Patellofemoral Kinematics with Sound Data for TKA and Non-Implanted Knees," 22nd Annual Congress of the International Society for Technology in Arthroplasty, Waikoloa, HI, 2009.
69. Carr, Komistek, **Mahfouz**, Mitchell, "Normal, Fused and Degenerative Conditions of the Lumbar Spine: A Comparison Study of the 3D In Vivo Mechanics," 22nd Annual Congress of the International Society for Technology in Arthroplasty, Waikoloa, HI, 2009.
70. Abdel Fatah, **Mahfouz**, Bowers, "Automatic Three Dimensional Distal Radius Analysis Using Statistical Atlases," 22nd Annual Congress of the International Society for Technology in Arthroplasty, Waikoloa, HI, 2009.
71. Cates, Barnett, Zingde, Schmidt, Komistek, Anderle, **Mahfouz**, "In Vivo Determination of THA Kinematics for Subjects Having Two Different Surgical Approaches," 22nd Annual Congress of the International Society for Technology in Arthroplasty, Waikoloa, HI, 2009.
72. Blumenfeld, Glaser, Bargar, Komistek, Langston, **Mahfouz**, "In Vivo Assessment of Hip Kinematics During Four Activities," 22nd Annual Congress of the International Society for Technology in Arthroplasty, Waikoloa, HI, 2009.
73. Kuhn, Zhang, Lin, **Mahfouz**, Fathy, "A System Level Design Approach to UWB Localization," IEEE International Microwave Symposium, Boston, MA, 2009.
74. Zhang, Kuhn, **Mahfouz**, Fathy, "Real-Time Noncoherent UWB Positioning Radar with Millimeter Range Accuracy in a 3D Indoor Environment," IEEE International Microwave Symposium, Boston, MA, 2009.
75. Kuhn, Zhang, **Mahfouz**, Fathy, "Real-time UWB Indoor Positioning System with Millimeter 3-D Dynamic Accuracy," IEEE International Symposium on Antennas and Propagation, Charleston, SC, 2009.
76. Sylvester, **Mahfouz**, "Quantifying Relative Shape Variation in Modern Human Femora and Humeri," Meeting of the American Association of Anatomists, New Orleans, LA, 2009.
77. Wasielewski, Komistek, Zingde, Sheridan, **Mahfouz**, "Lack of Axial Rotation in Mobile-Bearing Knee Designs," Knee Society Annual Meeting, Denver, CO, 2008.
78. Zingde, Wasielewski, Komistek, **Mahfouz**, "In Vivo Assessment of Axial Rotation in Mobile Bearing TKA," 54th Annual Meeting of the Orthopaedic Research Society, San Francisco, CA, 2008.

79. Komistek, Glaser, **Mahfouz**, Booth, Scuderi, Argenson, Zingde, Anderle, "Kinematic Differences between Male and Females: A Comprehensive Comparison Study," 54th Annual Meeting of the Orthopaedic Research Society, San Francisco, CA, 2008.
80. Zingde, Wasielewski, Komistek, **Mahfouz**, "In Vivo Assessment of Axial Rotation in Mobile Bearing TKA," 75th Annual Meeting of the American Academy of Orthopaedic Surgeons, San Francisco, CA, 2008.
81. **Mahfouz**, Abdel Fatah, El Dakhakhni, Tadross, Komistek, "Three-Dimensional Bone Creation and Landmarking Using Two Still X-Rays," 75th Annual Meeting of the American Academy of Orthopaedic Surgeons, San Francisco, CA, 2008.
82. **Mahfouz**, Abdel Fatah, El Dakhakhni, "Analysis of Variation and Automated Measurement of Adult Proximal Femora Using Sex-Specific Atlases," 8th International Symposium on Computer Methods in Biomechanics and Biomedical Engineering, Porto, Portugal, 2008.
83. Kuhn, Zhang, Merkl, Yang, Wang, **Mahfouz**, Fathy, "High Accuracy UWB Localization in Dense Indoor Environments," IEEE International Conference on Ultra-Wideband, Hannover, Germany, 2008.
84. Merkl, Fathy, **Mahfouz**, "Base Station Orientation Calibration in 3D Indoor UWB Positioning," IEEE International Conference on Ultra-Wideband, Hanover, Germany, 2008.
85. Zhang, Kuhn, Merkl, Fathy, **Mahfouz**, "Accuracy Enhancement of UWB Indoor Localization System via Arrangement of Base Stations," URSI General Assembly, Chicago, IL, 2008.
86. Zhang, Yang, Kuhn, Merkl, Fathy, **Mahfouz**, "Real-time incoherent impulse positioning radar with millimeter range accuracy in 3D indoor environment," URSI National Radio Science Meeting, San Diego, CA, 2008.
87. Abdel Fatah, **Mahfouz**, El Dakhakhni, Tadross, "3D Reconstruction of Patient Specific Bone Utilizing Biplanar X-Ray Images and Sex Specific Atlases," Orthopaedic Research Society, HI, 2007.
88. Zingde, Wasielewski, Komistek, **Mahfouz**, "In Vivo Assessment of Axial Rotation in Mobile Bearing TKA," 20th Annual Congress of the International Society for Technology in Arthroplasty, Paris, France, 2007.
89. Dennis, Sharma, Komistek, **Mahfouz**, Anderle, Little, Liu, "Kinematic Difference Between Subjects Having Low and High Flexion at the Same Flexion Angles: A Multicenter Study," 20th Annual Congress of the International Society for Technology in Arthroplasty, Paris, France, 2007.

90. Sharma, Komistek, Hernigou, **Mahfouz**, Anderle, Wang, "In Vivo Kinematic Comparison for Subjects Having Both Cruciate Ligaments Versus Those Using PS TKA," 20th Annual Congress of the International Society for Technology in Arthroplasty, Paris, France, 2007.
91. Mueller, Longnecker, Anderle, Komistek, **Mahfouz**, "In Vivo Comparison of TKA Kinematics with Ultra Congruent and Congruent Polyethylene Inserts in Natural Knee II CR TKA," 20th Annual Congress of the International Society for Technology in Arthroplasty, Paris, France, 2007.
92. Mueller, Akizuki, Zingde, Komistek, **Mahfouz**, Anderle, "In Vivo Comparison of Knee Kinematics for Subjects Implanted with a Zimmer Uni-Compartmental High Flex Knee System During Weight Bearing and Non-Weight Bearing Activities," 20th Annual Congress of the International Society for Technology in Arthroplasty, Paris, France, 2007.
93. Hirakawa, Zingde, Komistek, **Mahfouz**, Anderle, "In Vivo Comparison of Knee Kinematics for Subjects Implanted with a LCS RP PCS or a LPS Flex Mobile TKA," 20th Annual Congress of the International Society for Technology in Arthroplasty, Paris, France, 2007.
94. Glaser, Miner, Komistek, **Mahfouz**, Dennis, Liu, "In Vivo Comparison of Hip Mechanics for Subjects Implanted With a MIS or Traditional Surgical Technique - Extended Study," 20th Annual Congress of the International Society for Technology in Arthroplasty, Paris, France, 2007.
95. Glaser, Cates, Komistek, **Mahfouz**, Dennis, "In Vivo Correlation of Sound and Separation for Different Bearing Surfaces," 20th Annual Congress of the International Society for Technology in Arthroplasty, Paris, France, 2007.
96. Komistek, **Mahfouz**, Glaser, Booth, Scuderi, Argenson, Zingde, Anderle, "Gender Comparison of In Vivo Kinematics for Normal and TKA Subjects," 20th Annual Congress of the International Society for Technology in Arthroplasty, Paris, France, 2007.
97. Liu, Komistek, Cheng, **Mahfouz**, Sharma, Glaser, "3D In Vivo Contact Force Determination of Normal, Fused and Degenerative Cervical Spines," 20th Annual Congress of the International Society for Technology in Arthroplasty, Paris, France, 2007.
98. Cheng, Liu, Komistek, **Mahfouz**, Sharma, Glaser, "Determination of In Vivo, Three Dimensional Motion of the Cervical Spine Under Variable Conditions," 20th Annual Congress of the International Society for Technology in Arthroplasty, Paris, France, 2007.

99. Scuderi, Komistek, Dennis, Ranawat, Sharma, **Mahfouz**, Liu, Anderle, “Kinematic Performance Comparison for Traditional and High Flexion TKA,” 74th Annual Meeting of the American Academy of Orthopaedic Surgeons, San Diego, CA, 2007.
100. **Mahfouz**, Booth, Argenson, Merkl, Abdel Fatah, Kuhn, Pritchard, “Analysis of Variation and Automated Measurement of Adult Femora,” 74th Annual Meeting of the American Academy of Orthopaedic Surgeons, San Diego, CA, 2007.
101. Cheng, Komistek, **Mahfouz**, Carr, Damu, “In Vivo Mechanics Comparison for Various Lumbar Spine Conditions,” 74th Annual Meeting of the American Academy of Orthopaedic Surgeons, San Diego, CA, 2007.
102. Abdel Fatah, **Mahfouz**, Booth, Argenson, Merkl, Kuhn, “3D Morphological Data from Biplanar X-Ray Images for TKA using Sex-Specific Atlases,” 74th Annual Meeting of the American Academy of Orthopaedic Surgeons, San Diego, CA, 2007.
103. Kuhn, Zhang, Merkl, **Mahfouz**, Fathy, “UWB Localization and its Application to Ultra-Precise Indoor Asset Tracking,” IEEE International Microwave Symposium, Workshop – Wireless Local Positioning, 2007.
104. Zhang, Kuhn, **Mahfouz**, Fathy, “Planar Antipodal Vivaldi Antenna Array Configuration for Low Cross-Polarization and Reduced Mutual Coupling Performance,” IEEE AP-S International Symposium, Honolulu, HI, 2007.
105. Kuhn, Zhang, **Mahfouz**, Fathy, “Cross Polarization Effects and UWB Performance of Antipodal Vivaldi Antennas using Method of Moments,” URSI National Radio Science Meeting, Ottawa, Canada, 2007.
106. Zhang, Elsherbini, Fathy, **Mahfouz**, “Optimization of UWB Band-Notched Monopole Antennas,” URSI National Radio Science Meeting, Ottawa, Canada, 2007.
107. Merkl, Sylvester, **Mahfouz**, “A Three-dimensional Shape Comparison of AL129-1a and Modern Human Distal Femora,” Annual Meeting of American Association of Physical Anthropologists, Philadelphia, 2007.
108. Sylvester, Merkl, **Mahfouz**, “Reconstructing the AL 288-1 Femur Using Three-dimensional Computer Models,” Annual Meeting of American Association of Physical Anthropologists, Philadelphia, 2007.
109. El Dakhkhni, **Mahfouz**, Abdel Fatah, Pritchard, “An Automatic Calibration Method for Bi-planar X-ray 3D Reconstruction,” 3rd Cairo International Biomedical Engineering Conference, Cairo, Egypt, 2006.
110. Merkl, Smith, **Mahfouz**, Badawi, “Fuzzy-neural Multiple Bone Sex Classification System Utilizing Genetic Algorithms,” 3rd Cairo International Biomedical Engineering Conference, Cairo, Egypt, 2006.

111. Kuhn, **Mahfouz**, Merkl, "Advanced 3D Fluoroscopic Analysis of Implanted Joints", 3rd Cairo International Biomedical Engineering Conference, Cairo, Egypt, 2006.
112. **Mahfouz**, Abdel Fatah, El Dakhakhni, Mesiha, Kesler, Smith, "Proximal Femur 3-D Morphological Analysis Utilizing Statistical Bone Atlas," 3rd Cairo International Biomedical Engineering Conference, Cairo, Egypt, 2006.
113. Evans III, **Mahfouz**, "Design Optimization of a Three-dimensional Strain Sensor Using Multiphysics Finite Element Analysis," 3rd Cairo International Biomedical Engineering Conference, Cairo, Egypt, 2006.
114. Kuhn, **Mahfouz**, Zhang, Merkl, Fathy, "Electromagnetic Interference and its Effects on Ultra-wide Band Technology in the Operating Room," 3rd Cairo International Biomedical Engineering Conference, Cairo, Egypt, 2006.
115. Pritchard, **Mahfouz**, Evans III, "Biocompatible MEMS fabrication," 3rd Cairo International Biomedical Engineering Conference, Cairo, Egypt, 2006.
116. Tadross, Badawi, **Mahfouz**, Jantz, Blair, "Sex Determination From Fingerprint," 3rd Cairo International Biomedical Engineering Conference, Cairo, Egypt, 2006.
117. Abdel Fatah, **Mahfouz**, Jantz, "Automated Skull 3D Geodesic and Volumetric Measurements for Cranial Morphology Tracking", 3rd Cairo International Biomedical Engineering Conference, Cairo, Egypt, 2006.
118. **Mahfouz**, Badawi, Merkl, Abdel Fatah, Pritchard, Kesler, Moore, Jantz, "3D Statistical Shape Models of Patella for Gender Classification," 28th Annual International Conference of the IEEE Engineering in Medicine and Biology Society, New York, New York, 2006.
119. Evans III, **Mahfouz**, Pritchard, "Biocompatible MEMS Electrode Array for Determination of Three-Dimensional Strain," 28th Annual International Conference of the IEEE Engineering in Medicine and Biology Society, New York, New York, 2006.
120. **Mahfouz**, Badawi, Abdel Fatah, Kuhn, Merkl, "Reconstruction of 3D Patient-Specific Bone Models From Biplanar X-ray Images Utilizing Morphometric Measurements," International Conference on Image Processing, Computer Vision, and Pattern Recognition, Las Vegas, NV, 2006.
121. Badawi, **Mahfouz**, Tadross, Jantz, "Fingerprint-Based Gender Classification," International Conference on Image Processing, Computer Vision, and Pattern Recognition, Las Vegas, NV, 2006.

122. Zhang, Kuhn, Merkl, Fathy, **Mahfouz**, “Development of an UWB Indoor 3D Positioning Radar with Millimeter Accuracy,” International Microwave Symposium, San Francisco, CA, 2006.
123. **Mahfouz**, Merkl, “Automatic Segmentation of 3D Medical Images Using Fourier Descriptor-Based Deformable Models,” 7th International Symposium on Computer Methods in Biomechanics and Biomedical Engineering, Antibes, Cote d’Azur, France, 2006.
124. Merkl, **Mahfouz**, “Automatic Three-Dimensional Segmentation of Medical Images Using Sex-Specific Statistical Atlases,” 7th International Symposium on Computer Methods in Biomechanics and Biomedical Engineering, Antibes, Cote d’Azur, France, 2006.
125. **Mahfouz**, Booth Jr., Argenson, Merkl, Kuhn, Abdel Fatah, Pritchard, “Utilization of Biplanar X-Ray Images in 3D Reconstruction of Patient-Specific Bones and Automatic Morphometric Measurements,” 7th International Symposium on Computer Methods in Biomechanics and Biomedical Engineering, Antibes, Cote d’Azur, France, 2006.
126. Kuhn, Merkl, **Mahfouz**, “Advanced 3D Analysis of Implanted Joints through 3D-to-2D Registration of Implant Models to Fluoroscopic Images,” 7th International Symposium on Computer Methods in Biomechanics and Biomedical Engineering, Antibes, Cote d’Azur, France, 2006.
127. **Mahfouz**, Booth Jr., Argenson, Merkl, Abdel Fatah, Kuhn, “Analysis of Variation of Adult Femora Using Sex-Specific Statistical Atlases,” 7th International Symposium on Computer Methods in Biomechanics and Biomedical Engineering, Antibes, Cote d’Azur, France, 2006.
128. Zhang, Kuhn, Merkl, Fathy, **Mahfouz**, “High Resolution UWB Indoor Localization System Operating at 8 and 24 GHz Utilizing Time Difference of Arrival Approach,” URSI National Radio Science Meeting, Boulder, CO, 2006.
129. Zhang, Kuhn, Merkl, Fathy, **Mahfouz**, “Accurate UWB Indoor Localization System Utilizing Time Difference of Arrival Approach,” IEEE Radio and Wireless Symposium, San Diego, CA, 2006.
130. **Mahfouz**, “Registration and Application of Imaging in Surgical Navigation,” International Conference on Biomedical Engineering, Symposium S3: Medical Imaging in Orthopedic Biomechanics, Singapore, 2005.
131. Kuhn, **Mahfouz**, Abdel Fatah, Merkl, Pritchard, “3D Bone Reconstruction from Biplanar X-Rays,” International Conference on Biomedical Engineering, Singapore, 2005.

132. Evans, **Mahfouz**, Pritchard, To, "Development of Embedded MEMS Strain Sensor Arrays for Biomedical Applications," International Conference on Biomedical Engineering, Singapore, 2005.
133. To, **Mahfouz**, Pritchard, "Ligament Balancing During Total Knee Arthroplasty with Wireless Encapsulated Microcantilever Strain Sensors," International Conference on Biomedical Engineering, Singapore, 2005.
134. Merkl, **Mahfouz**, "Unsupervised Three-Dimensional Segmentation of Medical Images Using an Anatomical Bone Atlas," 12th International Conference on Biomedical Engineering, Singapore, 2005.
135. Merkl, Stiehl, **Mahfouz**, Kuhn, "Implanted Hip Separation Calculated Using a Modified Hough Transform: Analysis of Radiographic Images," 12th International Conference on Biomedical Engineering, Singapore, 2005.
136. Kuhn, **Mahfouz**, Abdel Fatah, Merkl, "Reconstruction of 3D Patient-Specific Bone Models from Biplanar X-ray Images," 12th International Conference on Biomedical Engineering, Singapore, 2005.
137. Kuhn, Merkl, **Mahfouz**, Komistek, "3D-to-2D Registration of Implant Models to X-ray Images with Special Emphasis on Error Analysis, Segmentation Effects, and Polyethylene Wear," 18th Annual Meeting of the International Society for Technology in Arthroplasty, Kyoto, Japan, 2005.
138. **Mahfouz**, Smith, Berg, Komistek, Walker, "Muscle Stimulation for Musculoskeletal Analysis Using MRI and Ultrasonography," 50th Annual Meeting of the Orthopedic Research Society, San Francisco, CA, 2004.
139. Pal, Rullkoetter, **Mahfouz**, Komistek, Walker, "In Vivo Determination of Tibiofemoral Contact for Subjects Having PS and PCR TKA," 50th Annual Meeting of the Orthopedic Research Society, San Francisco, CA, 2004.
140. Baker, Debrunner, Hoff, Bowen, **Mahfouz**, "Tomographic Reconstruction from an Uncontrolled Sensor Trajectory," IEEE International Symposium on Biomedical Imaging: From Nano to Macro, Arlington, VA, 2004.
141. Baker, Debrunner, **Mahfouz**, Hoff, Bowen, "CT from an Unmodified Standard Fluoroscopy Machine Using a Non-reproducible Path," Workshop on Computer Vision Applications in Medical Image Analysis, Prague, Czech Republic, 2004.
142. Berg, **Mahfouz**, Debrunner, Hoff, "A 2D Fourier Approach to Deformable Model Segmentation of 3D Medical Images," Workshop on Computer Vision Applications in Medical Image Analysis, Prague, Czech Republic, 2004.

143. Berg, **Mahfouz**, Debrunner, Hoff, "Automatic Segmentation of 3D Medical Images Using Fourier Descriptor-based Deformable Models," International Multiconference on Advanced Computer Systems and Computer Information Systems and Industrial Management Applications, Elk, Poland, 2004.
144. Wong, Jones, Komistek, **Mahfouz**, "Adaptation of a 3D Model-fitting Technique to Assess In Vivo Lumbar Spine Motion," 2nd Interdisciplinary Congress on Spine Care, World Spine II, Chicago, IL, 2003.
145. Wong, Goffin, Leuven, Komistek, **Mahfouz**, "In Vivo Kinematics of Normal, Degenerative, Fused and Disk-replaced Cervical Spines," 2nd Interdisciplinary Congress on Spine Care, World Spine II, Chicago, IL, 2003.
146. Komistek, Dennis, **Mahfouz**, Walker, "In Vivo Determination of PE Bearing in Subjects With A PS Mobile Bearing TKA," 16th Annual Meeting of the International Society for Technology in Arthroplasty, San Francisco, CA, 2003.
147. **Mahfouz**, Komistek, Nicholson, "Development of Mathematical Model to Determine in Vivo Shoulder and Elbow Forces/Torques," 16th Annual Meeting of the International Society for Technology in Arthroplasty, San Francisco, CA, 2003.
148. Argenson, Komistek, **Mahfouz**, Dennis, Aubaniac, "In Vivo Femorotibial and Patellofemoral Kinematics for Subjects Into Deep Flexion," 16th Annual Meeting of the International Society for Technology in Arthroplasty, San Francisco, CA, 2003.
149. **Mahfouz**, Dennis, Komistek, "In Vivo Determination of Axial Rotation: A Multicenter Analysis of 811 Total Knees Arthroplasty," 16th Annual Meeting of the International Society for Technology in Arthroplasty, San Francisco, CA, 2003.
150. **Mahfouz**, Komistek, Dennis, Hoff, "In Vivo Determination of Normal and Anterior Cruciate Ligament Deficient Knee Kinematics," 16th Annual Meeting of the International Society for Technology in Arthroplasty, San Francisco, CA, 2003.
151. Komistek, Dennis, **Mahfouz**, Haas, "In Vivo Kinematics for Implanted and Non Implanted Knees," 16th Annual Meeting of the International Society for Technology in Arthroplasty, San Francisco, CA, 2003.
152. Langer, Komistek, Kane, Dennis, **Mahfouz**, "A Three Dimensional Mathematical Model of the Ankle Joint Using Kane's Method of Dynamics," 70th Annual Meeting of the American Academy of Orthopaedic Surgeons, New Orleans, LA, 2003.
153. Goffin, Komistek, **Mahfouz**, Wong, Macht, Hoff, "In Vivo Kinematics of Normal, Degenerative, Fused and Disk-Replaced Cervical Spines," 70th Annual Meeting of the American Academy of Orthopaedic Surgeons, New Orleans, LA, 2003.

154. Komistek, Dennis, **Mahfouz**, Argenson, Ranawat, Walker, Schiffrine, Bachelin, Haas, Kilgus, "In Vivo Kinematics for Subjects Having Various Types of Knee Replacements," 70th Annual Meeting of the American Academy of Orthopaedic Surgeons, New Orleans, LA, 2003.
155. Komistek, Kane, **Mahfouz**, Carollo, Langer, Dennis, "In Vivo Determination of Joint and Muscle Forces in the Human Leg," 70th Annual Meeting of the American Academy of Orthopaedic Surgeons, New Orleans, LA, 2003.
156. Bertin, Komistek, **Mahfouz**, Hajner, Langer, "In Vivo Kinematics for Subjects Having an Asymmetrical Posterior Cruciate Retaining TKA," 70th Annual Meeting of the American Academy of Orthopaedic Surgeons, New Orleans, LA, 2003.
157. **Mahfouz**, Smith, Komistek, Walker, Dennis, "Muscle Simulation for Musculoskeletal Analysis," 70th Annual Meeting of the American Academy of Orthopaedic Surgeons, New Orleans, LA, 2003.
158. Goffin, Komistek, **Mahfouz**, Wong, Macht, "In Vivo Kinematics of Normal, Degenerative, Fused and Disk-Replaced Cervical Spines," 70th Annual Meeting of the American Academy of Orthopaedic Surgeons, New Orleans, LA, 2003.
159. Dennis, Komistek, **Mahfouz**, Haas, Traina, "In Vivo Determination of Normal and ACL Deficient Knee Kinematics," 49th Annual Meeting of the Orthopaedic Research Society, New Orleans, LA, 2003.
160. **Mahfouz**, Baker, Komistek, Dennis, "A New Method To Measure In Vivo Hip Joint Separation Using Hough Transform," 49th Annual Meeting of the Orthopaedic Research Society, New Orleans, LA, 2003.
161. **Mahfouz**, Komistek, Dennis, Sonin, Otte, Walker, "Muscle Reconstruction and Modeling of a Human Lower Extremity Using 3D Fat Suppressed Gradient Echo MR Imaging Data," Radiological Society of North America 88th Scientific Assembly and Annual Meeting, Chicago, IL, 2002.
162. **Mahfouz**, Komistek, Traina, Sonin, Otte, Walker, "In Vivo Determination of 3D Kinematics in an ACL Deficient Knee using X-ray Fluoroscopy and MRI," Radiological Society of North America 88th Scientific Assembly and Annual Meeting, Chicago, IL, 2002.
163. **Mahfouz**, Hoff, Komistek, Dennis, "Post-Operative Analysis of Knee Joint Kinematics using Fluoroscopy, with Error Analysis," 5th Annual North American Program on Computer Assisted Orthopaedic Surgery, Pittsburgh, PA, 2001.

1. Battaglia, **Mahfouz**, Komistek, "Pattern Recognition of Adipose Tissue in the Lumbar Para-Spinal Muscles Predicts Gender," Biomedical Engineering Society, Seattle, WA, 2013.
2. Abdel Fatah, **Mahfouz**, "Three Dimensional Articulating Cartilage Modeling Using Statistical Atlases," 11th International Symposium of Computer Methods in Biomechanics and Biomedical Engineering, Salt Lake City, UT, 2013.
3. Abdel Fatah, **Mahfouz**, "Restoration of Full Anatomy from Partial Bones," 11th International Symposium of Computer Methods in Biomechanics and Biomedical Engineering, Salt Lake City, UT, 2013.
4. **Mahfouz**, Scuderi, Abdel Fatah, Bowers, "Evaluation of Tibial Component Coverage in Total Knee Arthroplasty," 80th Annual Meeting of the American Academy of Orthopaedic Surgeons, Scientific Exhibit, Chicago, IL, 2013.
5. Komistek, Dennis, Sharma, Meccia, **Mahfouz**, Anderle, "Abnormal Axial Rotation Patterns Contributes to Reduced Weight-Bearing Flexion," 80th Annual Meeting of the American Academy of Orthopaedic Surgeons, Scientific Exhibit, Chicago, IL, 2013.
6. Zingde, Leszko, Sharma, **Mahfouz**, Grieco, Dennis, Anderle, Komistek, "3D In Vivo Patellofemoral Kinematics for TKA and Non-Implanted Knees," 59th Annual Meeting of the Orthopaedic Research Society, San Antonio, TX, 2013.
7. Zingde, Sharma, Anderle, Howser, **Mahfouz**, Dennis, Komistek, "In Vivo Determination of the Cam-Post Engagement in Fixed and Mobile Bearing TKA," 59th Annual Meeting of the Orthopaedic Research Society, San Antonio, TX, 2013.
8. Abdel Fatah, Shirley, Auerbach, **Mahfouz**, "Bilateral Directional Asymmetry in the Human Clavicle," American Anatomy Association Annual Meeting at Experimental Biology, San Diego, CA, 2012.
9. Zingde, Leszko, Sharma, Howser, Meccia, **Mahfouz**, Dennis, Komistek, "In Vivo Determination of the Cam-Post Engagement in Fixed and Mobile Bearing TKA," 25th Annual Congress of the International Society for Technology in Arthroplasty, Sydney, Australia, 2012.
10. Smith, Sharma, Colwell, **Mahfouz**, Komistek, "Validation of TKA Contact Force Models Using Telemetric Implants," 25th Annual Congress of the International Society for Technology in Arthroplasty, Sydney, Australia, 2012.
11. Smith, De Bock, Dennis, **Mahfouz**, Komistek, "Comparative Analysis of Quadriceps EMG Signals During Weight Bearing Flexion of Normal and TKA Knees," 25th Annual Congress of the International Society for Technology in Arthroplasty, Sydney, Australia, 2012.

12. Meccia, Spencer, Zingde, Leszko, **Mahfouz**, Komistek, "Glenohumeral Kinematics for Healthy, Osteoarthritic, and Post Total Shoulder Arthroplasty Shoulders," 58th Annual Meeting of the Orthopaedic Research Society, San Francisco, CA, 2012.
13. Carr, Cheng, Sharma, Komistek, **Mahfouz**, "The Impact of Low Back Pain or Degeneration on the Coupled Out-of-Plane Rotations in the Lumbar Spine," 58th Annual Meeting of the Orthopaedic Research Society, San Francisco, CA, 2012.
14. Johnson, **Mahfouz**, Cheng, Sharma, Hagewood, Komistek, "A Method for Quantifying in vivo Kinematics of the Lumbar Spine for Differentiating Patients Exhibiting Low Back Pain," 58th Annual Meeting of the Orthopaedic Research Society, San Francisco, CA, 2012.
15. Battaglia, **Mahfouz**, Johnson, "Semi-Automatic Segmentation of the Lumbar Muscles and Gender Specific Cross-Sectional Area," 58th Annual Meeting of the Orthopaedic Research Society, San Francisco, CA, 2012.
16. Mitchell, **Mahfouz**, Battaglia, "Accurate Length Measurements of ACL and PCL of a Healthy Patient During Weight-Bearing Deep Knee Bend," 58th Annual Meeting of the Orthopaedic Research Society, San Francisco, CA, 2012.
17. Tadross, **Mahfouz**, "A Novel Technique for Knee Kinematics Using A-Mode Ultrasound: Simulation and Feasibility Study," 58th Annual Meeting of the Orthopaedic Research Society, San Francisco, CA, 2012.
18. Zingde, Leszko, Nakamura, Mueller, **Mahfouz**, Dennis, Komistek, "In Vivo Determination of Camp-Post Engagement in PS, BCS, and Bi-surface TKA," 58th Annual Meeting of the Orthopaedic Research Society, San Francisco, CA, 2012.
19. Leszko, Zingde, De Bock, **Mahfouz**, Komistek, "Vibroarthography as an Innovative Non-Invasive Tool for Articular Cartilage Condition," 58th Annual Meeting of the Orthopaedic Research Society, San Francisco, CA, 2012.
20. Abdel Fatah, Shirley, Auerbach, **Mahfouz**, "Asymmetry Analysis Between Left and Right Clavicles," 29th Annual Meeting of the American Academy of Anatomists, Grenada, 2012. (submitted)
21. Mitchell, Cheng, Carr, Sharma, **Mahfouz**, Komistek, "Following a Lumbar Fusion, Do Adjacent Segments Increase in Overall Motion?" Biomedical Engineering Society Annual Meeting, Hartford, CT, 2011.
22. Tadross, **Mahfouz**, "Real-Time Automatic Reconstruction of Patient-Specific 3D Knee Model Using Ultrasound RF Signals," Biomedical Engineering Society Annual Meeting, Hartford, CT, 2011.

23. Tadross, **Mahfouz**, “Knee Kinematics Tracking Using A-Model Ultrasound: Simulation and Feasibility Study,” Biomedical Engineering Society Annual Meeting, Hartford, CT, 2011.
24. Carr, Cheng, Komistek, **Mahfouz**, Reid, “Kinematics Comparison for the Normal versus Disc Replaced Condition in the Cervical Spine,” 57th Annual Meeting of the Orthopaedic Research Society, Long Beach, CA, 2011.
25. Carr, Cheng, Komistek, **Mahfouz**, Mitchell, Sharma, Reid, “Is Fusion of the Lumbar Spine an Effective Procedure for Restoring More Normal Kinematics?” 57th Annual Meeting of the Orthopaedic Research Society, Long Beach, CA, 2011.
26. Tadross, **Mahfouz**, “A Novel Imaging System for Patient-Specific 3D Knee Model Reconstruction Using Ultrasound,” 57th Annual Meeting of the Orthopaedic Research Society, Long Beach, CA, 2011.
27. **Mahfouz**, Scuderi, Abdel Fatah, Bowers, “Three-dimensional Morphology of the Knee, An Ethnic Study,” 78th Annual Meeting of the American Academy of Orthopaedic Surgeons, Scientific Exhibit, San Diego, CA, 2011.
28. Carr, Cheng, Sharma, Komistek, **Mahfouz**, Mitchell, Little, “In-vivo Kinematics Between Pre-operative and Post-operative Fusion of the Lumbar Spine,” 78th Annual Meeting of the American Academy of Orthopaedic Surgeons, Scientific Exhibit, San Diego, CA, 2011.
29. **Mahfouz**, Battaglia, Abdel Fatah, Zingde, Komistek, “Total Knee Replacement Implant Classification Using Neural Networks, 78th Annual Meeting of the American Academy of Orthopaedic Surgeons, San Diego, CA, 2011.
30. Shirley, Abdel Fatah, Jantz, **Mahfouz**, “Improving Sex Estimation from the Human Cranium Using 3D CT Scans,” 63rd Annual Meeting of the American Academy of Forensic Sciences, Chicago, IL, 2011.
31. Wood, Jantz, Jantz, **Mahfouz**, Abdel Fatah “Improving Forensic Facial Reproductions Using Empirical Modeling,” 63rd Annual Meeting of the American Academy of Forensic Sciences, Chicago, IL, 2011.
32. Anderle, Zingde, Komistek, Dennis, **Mahfouz**, “Body Mass Index Comparison of Axial Rotation for Obese, Overweight and Normal Weight TKA Subjects,” 77th Annual Meeting of the American Academy of Orthopaedic Surgeons, New Orleans, LA, 2010.
33. Anderle, Zingde, Komistek, Dennis, **Mahfouz**, “Body Mass Index Comparison of Axial Rotation for Obese, Overweight and Normal Weight TKA Subjects,” 77th Annual Meeting of the American Academy of Orthopaedic Surgeons, Scientific Exhibit, New Orleans, LA, 2010.

34. Mueller, DeBoer, Clohisy, Anderle, Leszko, DeBock, Orekhov, Ho, Komistek, **Mahfouz**, "In-Vivo Kinematics of the Normal Knee and a Medially Pivoting TKA with Early and Mid-range Post-op Times," 56th Annual Meeting of the Orthopaedic Research Society, New Orleans, LA, 2010.
35. Cates, Zingde, Barnett, Komistek, Anderle, **Mahfouz**, "In Vivo Determination of THA Kinematics for Subjects Having Two Different Surgical Approaches," 56th Annual Meeting of the Orthopaedic Research Society, New Orleans, LA, 2010.
36. Anderle, Zingde, Komistek, Dennis, **Mahfouz**, "Axial Rotation Comparison for Obese, Overweight and Normal Weight TKA Subjects," 56th Annual Meeting of the Orthopaedic Research Society, New Orleans, LA, 2010.
37. Kuhn, **Mahfouz**, Anderle, Komistek, Dennis, Nachtrab, "Comparison of Osteoarthritic Knee Patients Analyzed In Vivo with Multiple Knee Braces During Step Up and Step Down Activities, 56th Annual Meeting of the Orthopaedic Research Society, New Orleans, LA, 2010.
38. Carr, Cheng, Komistek, **Mahfouz**, Reid, "In Vivo Kinematics Comparison for Subjects Having a Normal versus Single Level Disc Replacement of the Cervical Spine," 56th Annual Meeting of the Orthopaedic Research Society, New Orleans, LA, 2010.
39. Delport, Anderle, Komistek, **Mahfouz**, Barnett, Ho, "In Vivo Determination of Hip Kinematics for Subjects Implanted Using Two Different Hip Resurfacing Systems," 56th Annual Meeting of the Orthopaedic Research Society, New Orleans, LA, 2010.
40. Kuhn, Turnmire, **Mahfouz**, **Fathy**, "Adaptive Leading-Edge Detection in UWB Indoor Localization," IEEE Radio Wireless Symposium, New Orleans, LA, 2010.
41. Mueller, Haas, Dowd, Komistek, Anderle, **Mahfouz**, "In Vivo Determination of Knee Kinematics for Subjects Having a Mobile Bearing PS TKA," 76th Annual Meeting of the American Academy of Orthopaedic Surgeons, Las Vegas, NV, 2009.
42. Mueller, Victor, Bellemans, Nadaud, Komistek, Anderle, **Mahfouz**, "In Vivo Determination of Knee Kinematics for Subjects Having an ACL Retaining TKA," 76th Annual Meeting of the American Academy of Orthopedic Surgeons, Las Vegas, NV, 2009.
43. Carr, Mitchell, Cheng, Komistek, **Mahfouz**, "In Vivo Mechanics of the Lumbar Spine under a Full Dynamic Situation." 76th Annual Meeting of the American Academy of Orthopaedic Surgeons, Scientific Exhibit, Las Vegas, NV, 2009.
44. Sharma, Dennis, Komistek, **Mahfouz**, Anderle, Little, "Kinematic Difference between Subjects Having Low and High Flexion for the Same Flexion Angles," 76th Annual Meeting of the American Academy of Orthopaedic Surgeons, Scientific Exhibit, Las Vegas, NV, 2009.

45. Mueller, Victor, Bellemans, Nadaud, Komistek, **Mahfouz**, "In Vivo Determination of Knee Kinematics for Subjects Implanted with a Bi-Cruciate Stabilizing TKA," Annual Meeting of the American Academy of Orthopaedic Surgeons, Las Vegas, NV, 2009.
46. Tadross, **Mahfouz**, "3D Reconstruction of the Knee Using A-Mode Ultrasound: Feasibility Study," 76th Annual Meeting of American Academy of Orthopaedic Surgeons, Las Vegas, NV, 2009.
47. Blumenfeld, Glaser, Bargar, Komistek, Langston and **Mahfouz**, "In Vivo Assessment of Hip Kinematics during Four Difficult Activities," 55th Annual Meeting of Orthopedic Research Society, Las Vegas, NV, 2009.
48. Carr, Mitchell, Cheng, Komistek, **Mahfouz**, "In Vivo Mechanics of Lumbar Spine under a Full Dynamic Situation," 55th Annual Meeting of Orthopedic Research Society, Las Vegas, NV, 2009.
49. Leszko, Hovinga, Sharma, **Mahfouz**, Lerner, Anderle, Underwood, Komistek, "In Vivo Normal Knee Kinematics: Are Ethnicity or Gender Influencing Factors?" 55th Annual Meeting of the Orthopaedic Research Society, Las Vegas, NV, 2009.
50. Damu, Komistek, **Mahfouz**, Dennis, "In Vivo Contact Stresses for Subjects Implanted with Metal-on-Metal and Ceramic-on-Ceramic THA," 55th Annual Meeting of the Orthopaedic Research Society, Las Vegas, NV, 2009.
51. Glaser, Komistek, Dennis, Deaderick and **Mahfouz**, "In Vivo Assessment of Hip Kinematics in THA Patients with Various Bearing Surfaces: A Multi-Center Study," 55th Annual Meeting of Orthopedic Research Society, Las Vegas, NV, 2009.
52. Damu, Komistek, **Mahfouz**, Dennis, Anderle, "In Vivo Kinematics for Subjects Implanted with Either a Metal-on-Metal or Ceramic-on-Ceramic THA," 55th Annual Meeting of Orthopedic Research Society, Las Vegas, NV, 2009.
53. Glaser, Cates, Komistek, Henderson, **Mahfouz**, "Kinematics and Ground Reaction Forces: Comparison of Gait after THA with Different Bearing Surfaces," 55th Annual Meeting of Orthopedic Research Society, Las Vegas, NV, 2009.
54. Zingde, Sharma, Komistek, Dennis, **Mahfouz**, "In Vivo Comparison of Anterior/Posterior Translation for 2000 Knees Having Various TKA Designs," 55th Annual Meeting of Orthopedic Research Society, Las Vegas, NV, 2009.
55. Mueller, Haas, Dowd, Komistek, Anderle, **Mahfouz**, "In Vivo Kinematics of a New Low Contact Stress TKA," 55th Annual Meeting of the Orthopaedic Research Society, Las Vegas, NV, 2009.

56. Zingde, Mueller, Komistek, MacNaughton, Anderle, **Mahfouz**, "In Vivo Comparison of TKA Kinematics for Subjects with a PS, PCR or Bi-Cruciate Stabilizing Design," 55th Annual Meeting of the Orthopaedic Research Society, Las Vegas, NV, 2009.
57. Mueller, White, Komistek, Anderle, **Mahfouz**, "In Vivo Knee Kinematics of Subjects Implanted with an ACL-Retaining TKA," 55th Annual Meeting of the Orthopaedic Research Society, Las Vegas, NV, 2009.
58. Leszko, Zingde, Anderle, Paratte, Jean-Noel, **Mahfouz**, Komistek, "In Vivo Comparison of TKA Kinematics to the Non-Implanted, Contralateral Knees for the Same Subjects," 55th Annual Meeting of the Orthopaedic Research Society, Las Vegas, NV, 2009.
59. Carr, Dennis, Komistek, **Mahfouz**, Anderle, "Fluoroscopic Evaluation of Mobile Bearing TKA: Is Bearing Mobility Maintained over Time?" 55th Annual Meeting of the Orthopaedic Research Society, Las Vegas, NV, 2009.
60. Zingde, Leszko, Komistek, Wasielewski, Jean-Noel, Paratte, **Mahfouz**, "In Vivo Correlation of 3D Kinematics and Sound for Subjects with an Implanted and Non-Implanted Knee, Compared to the Normal Knee," 55th ORS Annual Meeting, Las Vegas, NV, 2009.
61. Zingde, Glaser, Komistek, Garino, Hozack, Dennis, **Mahfouz**, "In Vivo Determination and Correlation of Kinematics and Sound for Subjects Having Two Different Ceramic-on-Ceramic THA," 55th Annual Meeting of Orthopedic Research Society, Las Vegas, NV, 2009.
62. Zingde, Sharma, Komistek, Dennis, **Mahfouz**, "In Vivo Comparison of Axial Rotation for 2000 Non-Implanted and Implanted Knees," 55th Annual Meeting of Orthopedic Research Society, Las Vegas, NV, 2009.
63. Tadross, **Mahfouz**, "Intraoperative Reconstruction of 3D Knee Model for Computer Assisted Knee Surgery," 55th Annual Meeting of Orthopaedic Research Society, Las Vegas, NV, 2009.
64. Tadross, **Mahfouz**, "Reconstruction of 3D Knee Model Using Tracked A-Mode Ultrasound," 55th Annual Meeting of Orthopaedic Research Society, Las Vegas, NV, 2009.
65. Kuhn, Merkl, **Mahfouz**, "Wireless Tracking in Orthopedic Surgical Navigation with Application and Performance in TKA," 55th Annual Meeting of Orthopedic Research Society, Las Vegas, NV, 2009.
66. Tadross, **Mahfouz**, "A Novel Technique for 3D Knee Model Reconstruction using A-mode Ultrasound," 22nd Annual Congress of the International Society for Technology in Arthroplasty, Waikoloa, HI, 2009.

67. Delpont, Anderle, Komistek, **Mahfouz**, Barnett, Ho, "In Vivo Determination of Hip Kinematics for Subjects Implanted Using Two Different Hip Resurfacing Systems," 22nd Annual Congress of the International Society for Technology in Arthroplasty, Waikoloa, HI, 2009.
68. Sylvester, **Mahfouz**, "The Effective Mechanical Advantage of the Australopithecine Knee," 77th Annual Meeting of the American Association of Physical Anthropologists, Columbus, OH, 2008.
69. **Mahfouz**, Anderle, Bajares, Oliva, Tokish, Ochoa, Komistek, Zingde, "In Vivo Kinematics of the Total Facet Arthroplasty System (TFAS)," 75th Annual Meeting of the American Academy of Orthopaedic Surgeons, San Francisco, CA, 2008.
70. Sharma, Dennis, Komistek, **Mahfouz**, Anderle, Little: "Kinematic Difference between Subjects Having Low and High Flexion for the Same Flexion Angles," 75th Annual Meeting of the American Academy of Orthopaedic Surgeons, San Francisco, CA, 2008.
71. Merkl, Kuhn, **Mahfouz**, DeBoer, "Surgical Navigation Systems: Evaluating Electromagnetic Versus Optical Technology in the OR," 75th Annual Meeting of the American Academy of Orthopaedic Surgeons, San Francisco, CA, 2008.
72. Leszko, Komistek, **Mahfouz**, Judet, Bonnin, Colombier, Lin, Poore, "In Vivo Determination of the Mobile Bearing Total Ankle Prosthesis Kinematics," 75th Annual Meeting of the American Academy of Orthopaedic Surgeons, San Francisco, CA, 2008.
73. Glaser, Cates, Komistek, **Mahfouz**, Dennis, "Clicking and Squeaking: In Vivo Sound and Separation Correlation of Different Bearing Surfaces," 75th Annual Meeting of the American Academy of Orthopaedic Surgeons, San Francisco, CA, 2008.
74. Liu, Cheng, Komistek, **Mahfouz**, Sharma, Glaser, "3D In Vivo Measurement of Coupled Motions in the Cervical Spines Under a Full Dynamic Situation," Scientific Exhibit, 75th Annual Meeting of the American Academy of Orthopaedic Surgeons, San Francisco, CA, 2008.
75. Liu, Komistek, **Mahfouz**, Cheng, Sharma, Glaser, "Normal, Fused and Degenerative Cervical Spines: A Comparative Study of 3D In Vivo Kinetics," Scientific Exhibit, 75th Annual Meeting of the American Academy of Orthopaedic Surgeons, San Francisco, CA, 2008.
76. Glaser, Komistek, Cates, Dennis, **Mahfouz**, Liu, "A Non-Invasive Technique for Evaluation of Hip Joint Conditions Using Sound and Vibration," 54th Annual Meeting of the Orthopaedic Research Society, San Francisco, CA, 2008.
77. Mueller, Leszko, Komistek, **Mahfouz**, "Implementing In Vivo Kinematics During THA Design: The Virtual Hip Simulator," 54th Annual Meeting of the Orthopaedic Research Society, San Francisco, CA, 2008.

78. Glaser, Komistek, Cates, **Mahfouz**, “Hip Analysis Involving Experiments and Mathematical Modeling,” 54th Annual Meeting of the Orthopaedic Research Society, San Francisco, CA, 2008.
79. **Mahfouz**, Abdel Fatah, Hartzband, Glassman, Smith, “Three Dimensional Assessment of Proximal Femoral Morphology: Can It Predict the Bone Quality?” 54th Annual Meeting of the Orthopaedic Research Society, San Francisco, CA, 2008.
80. Zingde, Hirakawa, Komistek, **Mahfouz**, Anderle, “In Vivo Comparison of Knee Kinematics for Subjects Implanted with a LCA or a LPS Flex Mobile Bearing TKA,” 54th Annual Meeting of the Orthopaedic Research Society, San Francisco, CA, 2008.
81. Abdel Fatah, **Mahfouz**, Merkl, Hartzband, “Automatic Method for Calculation of Clinical Transepicondylar Axis Using Statistical Atlases,” 54th Annual Meeting of the Orthopaedic Research Society, San Francisco, CA, 2008.
82. **Mahfouz**, Abdel Fatah, Hartzband, Glassman, “Automatic 3D Morphological Analysis of Proximal Femur,” 54th Annual Meeting of the Orthopaedic Research Society, San Francisco, CA, 2008.
83. **Mahfouz**, El Dakhkhni, Abdel Fatah, Tadross, Komistek, “Three-dimensional Bone Creation and Landmarking using Two X-rays,” 54th Annual Meeting of the Orthopaedic Research Society, San Francisco, CA, 2008.
84. Tadross, **Mahfouz**, “Sex Specific Bone Morphing for Total knee Arthroplasty,” 54th Annual Meeting of the Orthopaedic Research Society, San Francisco, CA, 2008.
85. Tadross, **Mahfouz**, “Optimization Techniques for Bone Morphing Using Sex-Specific Atlases,” 54th Annual Meeting of Orthopaedic Research Society, San Francisco, CA, 2008.
86. Zingde, Wasielewski, Komistek, **Mahfouz**, “In Vivo Assessment of Axial Rotation in Mobile Bearing TKA,” 54th Annual Meeting of the Orthopaedic Research Society, San Francisco, CA, 2008.
87. Komistek, Glaser, **Mahfouz**, Booth, Scuderi, Argenson, Zingde, Anderle, “Kinematic Differences between Males and Females: A Comprehensive Study,” 54th Annual Meeting of the Orthopaedic Research Society, San Francisco, CA, 2008.
88. **Mahfouz**, Booth, Argenson, Merkl, Abdel Fatah, Kuhn, Pritchard, “Analysis of Variation and Automated Measurement of Adult Femora Using Sex-specific Atlases,” 74th Annual Meeting of American Academy of Orthopaedic Surgeons, San Diego, CA, 2007.

89. **Mahfouz**, Booth, Argenson, Merkl, Abdel Fatah, Kuhn, "3D Morphological Data from Biplanar X-ray Images for TKA Using Sex-specific Atlases," 74th Annual Meeting of American Academy of Orthopaedic Surgeons, San Diego, CA, 2007.
90. Liu, Komistek, Cheng, **Mahfouz**, Furmanski, Adrija, "In Vivo 3D Quantification of Kinetics Characteristics in the Normal, Degenerative and Fused Cervical Spine," 74th Annual Meeting of American Academy of Orthopaedic Surgeons, San Diego, CA, 2007.
91. Shinro, Komistek, **Mahfouz**, Mueller, "In Vivo Comparison of Kinematics For Subjects Having a Nexgen High Flex or Scorpio PSTKA," 74th Annual Meeting of American Academy of Orthopaedic Surgeons, San Diego, CA, 2007.
92. Cates, Zingde, Komistek, **Mahfouz**, "In Vivo Comparison of PCR vs. PS High Flexion TKA," 74th Annual Meeting of American Academy of Orthopaedic Surgeons, San Diego, CA, 2007.
93. Liu, Komistek, **Mahfouz**, Cheng, Sharma, "In Vivo Evaluation of Dynamic Characteristics of the Normal, Degenerative, Fused and Disc Replacement Cervical Spines," 53rd Annual Meeting of the Orthopaedic Research Society, San Diego, CA, 2007.
94. Glaser, Cates, Komistek, **Mahfouz**, "In Vivo Hip Kinematics Comparison During Gait Using Fluoroscopy, Frequency and Sound Analysis," 53rd Annual Meeting of the Orthopaedic Research Society, San Diego, CA, 2007.
95. Sharma, Komistek, Dennis, Scuderi, Cates, **Mahfouz**, "Kinetic Performance Comparison for Traditional and High Flexion TKA," 53rd Annual Meeting of the Orthopaedic Research Society, San Diego, CA, 2007.
96. Sharma, Komistek, **Mahfouz**, D'Lima, Colwell, Anderle, "Comparison of Tibiofemoral Contact Forces Predicted by a Computational Model to Those Measured by a Telemetric Tibial Implant," 53rd Annual Meeting of the Orthopaedic Research Society, San Diego, CA, 2007.
97. Leszko, Karra, Komistek, **Mahfouz**, "Comparison of Knee Mechanics for the Normal, Varus and Valgus Knees," 53rd Annual Meeting of the Orthopaedic Research Society, San Diego, CA, 2007.
98. Cates, Zingde, Komistek, **Mahfouz**, "In Vivo Comparison of PCR vs. PS High Flexion TKA," 53rd Annual Meeting of the Orthopaedic Research Society, San Diego, CA, 2007.
99. Qu, Islam, To, **Mahfouz**, "Micro-cantilever Array Pressure Measurement System for Biomedical Instrumentation," IEEE Sensors, Atlanta, GA, 2007.

100. Abdel Fatah, **Mahfouz**, "Automatic 3D Analysis of Proximal Femur Utilizing Statistical Atlases," 6th Combined Meeting of the Orthopaedic Research Societies, Honolulu, HI, 2007.
101. Zhang, Kuhn, **Mahfouz**, Fathy, "Planar Antipodal Vivaldi Antenna Array Configuration for Low Cross-Polarization and Reduced Mutual Coupling Performance," IEEE AP-S International Symposium, Honolulu, HI, 2007.
102. Glaser, Cates, Komistek, **Mahfouz**, Dennis, Lui, "Experimental and Theoretical Analysis of Different Bearing Surfaces for THA," 20th International Society for Technology in Arthroplasty, Paris, France, 2007.
103. Leszko, Komistek, **Mahfouz**, Judet, Bonnin, Colombier, Lin, "In Vivo Determination of the Mobile Bearing Total Ankle Prosthesis Kinematics," 20th International Society for Technology in Arthroplasty, Paris, France, 2007.
104. Glaser, Miner, Komistek, **Mahfouz**, Dennis, Anderle, "Does Separation Vary With Different Surgical Techniques: Traditional Posterolateral vs. Minimally Invasive Anterolateral and Posterolateral THA," 20th International Society for Technology in Arthroplasty, Paris, France, 2007.
105. Cheng, Liu, Komistek, **Mahfouz**, Sharma, Glaser, "Determination of In Vivo Three-Dimensional Motion of the Cervical Spine Under Variable Conditions," 20th International Society for Technology in Arthroplasty, Paris, France, 2007.
106. To, Qu, **Mahfouz**, "ASIC Design for Wireless Surgical MEMS Device and Instrumentation," 28th Annual International Conference IEEE Engineering Medicine and Biology Society, New York, NY, 2006.
107. **Mahfouz**, Stiehl, Merkl, Kuhn, Komistek, "Implanted Hip Separation Calculated Using a Modified Hough Transform Analysis of Fluoroscopic Images," 73rd Annual Meeting of American Academy of Orthopaedic Surgeons, Chicago, IL, 2006.
108. Liu, Komistek, **Mahfouz**, "In Vivo Dynamic Comparison of Normal, Degenerative, Fused and Disc Replacement Cervical Spines," 73rd Annual Meeting of American Academy of Orthopaedic Surgeons, Chicago, IL, 2006.
109. Sharma, Komistek, **Mahfouz**, Ranawat, Dennis, "In Vivo Determination of Contact Pressures for Fixed and Mobile Bearing TKA," Scientific Exhibit, 73rd Annual Meeting of American Academy of Orthopaedic Surgeons, Chicago, IL, 2006.
110. Sharma, Komistek, Ranawat, Dennis, **Mahfouz**, "In-vivo Performance Comparison between Mobile and Fixed Bearing TKA," 52nd Annual Meeting of the Orthopedic Research Society, Chicago, IL, 2006.

111. Moore, Sylvester, Merkl, Kuhn, **Mahfouz**, "Creating a Statistical Atlas of Femora from Three-Dimensional CT Data," 75th Annual Meeting of American Association of Physical Anthropologists, Anchorage, AK, 2006.
112. Liu, Komistek, **Mahfouz**, "In Vivo Kinetic Analysis of Normal, Degenerative, Fused and Disc Replacement Cervical Spine," 5th World Congress of Biomechanics, Munich, Germany, 2006.
113. Liu, Komistek, Hamel, **Mahfouz**, Gabriel, "Automatically Image Controlled Mobile Fluoroscope System," 5th World Congress of Biomechanics, Munich, Germany, 2006.
114. Leszko, Karra, Komistek, **Mahfouz**, "Mechanics of Normal, Varus and Valgus Knees," 19th Annual Meeting of the International Society for Technology in Arthroplasty, New York, NY, 2006.
115. Liu, Komistek, Cheng, **Mahfouz**, "In Vivo Dynamic Determination of Normal, Degenerative, and Fused Cervical Spines," 19th Annual Meeting of the International Society for Technology in Arthroplasty, New York, NY, 2006.
116. **Mahfouz**, Walker, Anderle, "In Vivo Comparison of ACL Deficient and Normal Knee Kinematics During a Deep Knee Bend and Gait," 19th Annual Meeting of the International Society for Technology in Arthroplasty, New York, NY, 2006.
117. Nicholson, Komistek, **Mahfouz**, Hamel, Sharma, "In Vivo Dynamics of Normal, Rotator Cuff Deficient, Total and Reverse Replacement Shoulders," Scientific Exhibit, 72nd Annual Meeting of American Academy of Orthopaedic Surgeons, Washington, DC, 2005.
118. **Mahfouz**, Nadaud, Komistek, Dennis, Anderle, "In Vivo Three-Dimensional Determination of OA Brace Effectiveness: A Multiple Brace Analysis," 51st Annual Meeting of the Orthopaedic Research Society, Washington, DC, 2005.
119. Sharma, Komistek, Ranawat, Dennis, **Mahfouz**, "In-Vivo Contact Pressures in Total Knee Arthroplasty," 18th Annual Meeting of the International Society for Technology in Arthroplasty, Kyoto, Japan, 2005.
120. Liu, Komistek, **Mahfouz**, Wasserman, Stinton, "In vivo Kinematic and Kinetic Comparison of Normal and Fused Cervical Spines," 18th Annual Meeting of the International Society for Technology in Arthroplasty, Kyoto, Japan, 2005.
121. Debrunner, Baker, **Mahfouz**, Hoff, Bowen, "Tomographic Reconstruction from an Uncontrolled Sensor Trajectory," IEEE International Symposium on Biomedical Imaging: Nano to Macro, 2004.

122. Sonin, **Mahfouz**, Komistek, Dennis, Otte, Walker, "In Vivo Determination of Three Dimensional Normal Knee Motion During Five Weight-bearing Activities Using X-ray Fluoroscopy and MRI," Radiological Society of North America 88th Scientific Assembly and Annual Meeting, Chicago, IL, 2002.
123. Sonin, **Mahfouz**, Komistek, Traina, Otte, Walker, "In Vivo Determination of 3D Kinematics in an ACL Deficient Knee Using X-ray Fluoroscopy and MRI," Radiological Society of North America 88th Scientific Assembly and Annual Meeting, Chicago, IL, 2002.
124. Sonin, **Mahfouz**, Komistek, Dennis, Otte, Walker, "Muscle Reconstruction and Modeling of a Human Lower Extremity Using 3D Fat Suppressed Gradient Echo MR Imaging Data," Radiological Society of North America 88th Scientific Assembly and Annual Meeting, Chicago, IL, 2002.
125. **Mahfouz**, Hoff, Underwood, Komistek, Dennis, "Global Optimization for Recovering the Position and Orientation of Free-Form Objects in Medical Imaging Registration Using a New Smoothing Approach," 15th Annual Meeting of the International Society for Technology in Arthroplasty, London, England, 2002.
126. Komistek, Kane, **Mahfouz**, Dennis, Haas, "In Vivo Forces and Motions from Fluoroscopy and Mathematical Modeling," 15th Annual Meeting of the International Society for Technology in Arthroplasty, London, England, 2002.
127. **Mahfouz**, Hoff, Komistek, Dennis, "Verification of Three-Dimensional Joint Kinematics Determined Using Fluoroscopy: An Error Analysis," 15th Annual Meeting of the International Society for Technology in Arthroplasty, London, England, 2002.
128. **Mahfouz**, Komistek, Walker, Dennis, "Muscle Reconstruction and Modeling from MRI-Scan," 15th Annual Meeting of the International Society for Technology in Arthroplasty, London, England, 2002.
129. **Mahfouz**, Dennis, Komistek, Sedel, Bizot, Nortcut, Hammill, Anderle, "In Vivo Determination of Hip Separation in Subjects having Either Alumina-on-Alumina or Alumina-on-Polyethylene Total Hip Arthroplasty," SICOT, San Diego, CA, 2002.
130. Argenson, Komistek, **Mahfouz**, Aubaniac, Dennis, "In Vivo Determination of Knee Kinematics for Subjects Implanted with Unicompartmental Arthroplasty," SICOT, San Diego, CA, 2002.
131. Lombardi, Komistek, Northcut, Dennis, Anderle, **Mahfouz**, "In Vivo Determination of CAM/POST Engagement and Kinematics of the Femur Relative to the Polyethylene Insert," SICOT, San Diego, CA, 2002.

132. Kilgus, Komistek, Haas, Smith, Hammill, Dennis, Walker, **Mahfouz**, "Polyethylene Bearing Motion Relative to the Tibia and the Femur in Mobile Bearing TKA," SICOT, San Diego, CA, 2002.
133. Northcut, Kobori, Komistek, Haas, Walker, Macht, **Mahfouz**, "Comparison of Fixed vs. Mobile Bearing Range of Motion For Japanese Patients Having Either a Resurfaced or Unsurfaced Patella," SICOT, San Diego, CA, 2002.
134. Komistek, Dennis, **Mahfouz**, Hoff, Haas, Anderson, "In Vivo Determination of Three Dimensional Normal Knee Motion during Five Weight-Bearing Activities," SICOT, San Diego, CA, 2002.
135. **Mahfouz**, Hoff, Komistek, Dennis, "Verification of Three-Dimensional Joint Kinematics Determined Using Fluoroscopy: An Error Analysis," 4th World Congress of Biomechanics, Calgary, Canada, 2002.
136. **Mahfouz**, Komistek, Walker, Dennis, "Muscle Reconstruction and Modeling from Magnetic Resonance Imaging," 4th World Congress of Biomechanics, Calgary, Canada, 2002.
137. **Mahfouz**, Hoff, Underwood, Komistek, Dennis, "Global Optimization for Recovering the Position and Orientation of Free-Form Objects in Medical Imaging Registration Using a New Smoothing Approach," 4th World Congress of Biomechanics, Calgary, Canada, 2002.
138. Komistek, Kane, **Mahfouz**, Dennis, Haas, "In Vivo Forces and Motions from Fluoroscopy and Mathematical Modeling," 4th World Congress of Biomechanics, Calgary, Canada, 2002.
139. **Mahfouz**, Hoff, Anderson, Northcut, Komistek, "Verification of Three-Dimensional Joint Kinematics Determined Using Fluoroscopy: An Error Analysis," 48th Annual Meeting of the Orthopaedic Research Society, Dallas, TX, 2002.
140. Komistek, Dennis, **Mahfouz**, Hoff, Haas, Anderson, "In Vivo Determination of Three Dimensional Normal Knee Motion during Five Weight-Bearing Activities," 14th Annual Meeting of the International Society for Technology in Arthroplasty, Kharkiv, Ukraine, 2001.
141. Komistek, Dennis, **Mahfouz**, Hoff, Haas, Anderson, "In Vivo Determination of Three Dimensional Normal Knee Motion during Five Weight-Bearing Activities," 18th Congress of International Society of Biomechanics, Zurich, Switzerland, 2001.
142. Komistek, Dennis, **Mahfouz**, Haas, "In Vivo Determination of Three Dimensional Normal Knee Motion During Five Weight-Bearing Activities," 4th Combined Meeting of the Orthopaedic Research Societies of Biomechanics, Rhodes, Greece, 2001.

143. Komistek, Hoff, **Mahfouz**, Sarojak, Dennis, Anderson, “An Interactive Fluoroscopy-Based System for In Vivo Kinematic Analysis of Total Joint Arthroplasty,” European Society of Biomechanics, Dublin, Ireland, 2000.

GUEST LECTURESHIPS

1. **Mahfouz**, “Smart Instruments: Wireless Technology Invades the Operating Room,” *IEEE Topical Conference on Biomedical Wireless Technologies, Networks, and Sensing Systems*, San Clara, CA, 2012.
2. To, **Mahfouz**, “Design of Wireless Inertial Trackers for Human Joint Motion Analysis,” *IEEE Topical Conference on Biomedical Wireless Technologies, Networks, and Sensing Systems*, San Clara, CA, 2012.
3. **Mahfouz**, “History and Application of Computed Tomography (CT) Images,” *Advances in Forensic Anthropology*, Raleigh, NC, 2011.
4. **Mahfouz**, “History and Application of Empirical Modeling,” *Advances in Forensic Anthropology*, Raleigh, NC, 2011.
5. **Mahfouz**, “Use of CT Imaging and Empirical Modeling in the Development of the Facial Reproduction Software,” *Advances in Forensic Anthropology*, Raleigh, NC, 2011.
6. **Mahfouz**, “Intelligent Wireless Sensing Networks in Medicine: Diagnostic, In Vivo, Surgical, and Remote Patient Monitoring Application,” *IEEE International Microwave Symposium*, Baltimore, MD, 2011.
7. **Mahfouz**, Kuhn, “Ultra-Wideband Tracking for Surgical Navigation,” *Medical and Biological Microwave Sensors and Systems Workshop, IEEE International Microwave Symposium*, Baltimore, MD, 2011.
8. **Mahfouz**, To, “Intelligent Wireless Sensing Networks in Medicine: Diagnostic, In Vivo, Surgical, and Remote Patient Monitoring Applications,” *Medical and Biological Microwave Sensors and Systems Workshop, IEEE International Microwave Symposium*, Baltimore, MD, 2011.
9. Fathy, **Mahfouz**, “UWB Technology for Potential Biomedical Applications – Precise Indoor Positioning & Imaging,” *Wireless Biomedical Applications Workshop, IEEE Radio and Wireless Symposium*, Phoenix, AZ, 2011.
10. **Mahfouz**, “Biomedical Applications in Wireless Sensor Networks,” *Zigbee Applications Workshop, IEEE Radio and Wireless Symposium*, Phoenix, AZ, 2011.
11. Kuhn, **Mahfouz**, Fathy, “A UWB Real-time Millimeter 3-D Wireless Positioning System,” *Advances in UWB Localization and Sensing Workshop in European Microwave Conference*, Rome, Italy, 2009.

12. **Mahfouz**, Fathy, Kuhn, Wang, “Recent Trends and Advances in UWB Positioning,” *IEEE MTT-S Int. Microwave Workshop on Wireless Sensing, Local Positioning, and RFID*, Cavtat, Croatia, 2009.
13. **Mahfouz**, “The future of orthopaedics: trends in minimally invasive surgery, healthcare, and 21st century technologies in the orthopaedics industry,” Invited Talk, Oct. 2009.
14. Cairo International Biomedical Engineering Conference, Invited Talks. “Operating Room of the Future Orthopedic Perspective,” Cairo, Egypt, December 2008.
15. Aultman Institute Program in Continuing Medical Education. “Gender Anatomical Differences.” Canton, Ohio, June 2007.
16. EFFORT Congress 2007. “Gender Specific Arthroplasty.” Florence, Italy, May 2007.
17. Cairo International Biomedical Engineering Conference, Invited Talks. “Operating Room of the Future,” Cairo, Egypt, December 2006.
18. Zimmer France. “Gender differences in distal femoral anatomy.” Paris, France, November 2006.
19. OhioHealth Foundation. “Computer Aided Surgery/MEMS Sensors/Operating Room of the Future.” Columbus, Ohio, July 2006.
20. Zimmer Inc., Gender Solutions Panel Meeting. “Anatomical Gender Differences Using Sex Specific Atlases.” Indianapolis, Indiana, June 2006.
21. International Conference on Biomedical Engineering ICBME, Symposium S3: Medical Imaging in Orthopedic Biomechanics. “Registration and application of imaging in surgical navigation.” Singapore, December 2005 (invited workshop).
22. The Zimmer Institute - Center for Musculoskeletal Research, Past, Present and Future of TKA. “Surgical Navigation Using Bone Morphing.” Knoxville, Tennessee, October 2005.
23. The Zimmer Institute - Center for Musculoskeletal Research, Past, Present and Future of TKA. “Intra-Operative Compartmental Pressure Sensors.” Knoxville, Tennessee, October 2005.
24. Zimmer Inc., Gender Knee Meeting. “Gender Knee Variation – Sizing Strategies.” Chicago, Illinois, October 2005.
25. Zimmer Annual Meeting. “Computer Aided Surgery/Minimally Invasive Surgery/Operating Room of the Future.” Vail, Colorado, January 2005.

26. Zimmer Inc., "Three-Dimensional Statistically Deformable Shape Models with Applications to Computer Assisted Surgical Navigation." Warsaw, Indiana, October 2004.
27. University of Tennessee, Anthropology Department. "Surgical Navigation Techniques: Deformable Bone Atlas and Biplanar Registration." Knoxville, Tennessee, September 2004.
28. DJ Orthopedics. "In Vivo Determination of 3D Kinematics for ACL Deficient Knees with and Without a Brace." San Diego, California, September 2004.
29. Physiology and Biophysics, Biomedical Engineering Seminar – Visiting Faculty Member. "In Vivo 3D Kinematic Analysis and Modeling of the Lumbar Spine." Mayo Clinic, Rochester, Minnesota, May 2004.
30. Archus Orthopedics Inc. Scientific Advisory Board Meeting. "In Vivo 3D Kinematic Analysis of the Lumbar Spine." NASS 2003 San Diego, California, October 2003.
31. University of Tennessee, Mechanical Aerospace and Biomedical Engineering Department. "Tomographic Imaging from Fluoroscopic Video / Three Dimensional Model Development of Human Muscles and Bones Using MRI & Other Research." Knoxville, Tennessee, March 2003.
32. John N. Insall Traveling Fellowship Rose Medical Center and Rocky Mountain Musculoskeletal Research laboratory. "Surgical Navigation Current and Future Practices." Denver, Colorado, October 2002.
33. DePuy Inc., "In Vivo Determination of Hip Joint Separation Using Hough Transform." Warsaw, Indiana, June 2002.
34. University of Denver. "A New Optimization Techniques for Estimating 6 Degrees of Freedom for Implanted and Non Implanted Knees from Single Plane X- Ray Fluoroscopy." Denver, Colorado, May 2002.
35. Medtronic Surgical Navigation Technologies. "MRI in Surgical Navigation." Louisville, Colorado, January 2002.
36. Colorado School of Mines. "3D-to-2D Registration in Medical Imaging." Golden, Colorado, November 2001.
37. National Science Foundation Industry/University Cooperative Research Center for Intelligent Biomedical Devices and Musculoskeletal Systems IBDMS. "Three Dimensional Model Development of Human Muscles and Bones Using MR/CT." Colorado School of Mines, Golden, Colorado, October 2001.

38. DePuy Inc., "Verification of Three-Dimensional Joint Kinematics Determined 3D-to-2D Registration System: An Error Analysis." Warsaw, Indiana, June 2001.
39. National Science Foundation Industry/University Cooperative Research Center for Intelligent Biomedical Devices and Musculoskeletal Systems IBDMS. "Determination of the Femorotibial Kinematics of the Normal Knee." Colorado School of Mines, Golden, Colorado, October 2000.
40. National Science Foundation Industry/University Cooperative Research Center for Intelligent Biomedical Devices and Musculoskeletal Systems IBDMS. "Improvement of Optimization Algorithms in the Model Fitting System." Colorado School of Mines, Golden, Colorado, April 2000.