ALIREZA ABOUHOSSEIN PH.D.
Assitant professor of Biomechanical/ human factors Engineering
Shahid Beheshti University of Medical Sciences,
Department of Ergonomics, Tehran, Iran
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EDUCATION

Institute for Surgical Technology and Biomechanics
The University of Bern, Bern, Switzerland [09/2005-10/2010]
Ph.D. in Science (designation Magna Cum Laude)
Dissertation: "**A dynamic, non-linear multi-body model to estimate segmental forces & torques in the lumbar spine**" (musculoskeletal modeling-multibody modeling-experimental and simulation)
Supervisors: Profs. Stephen Ferguson (ETHZ) & Lutz Nolte (University of Bern)

The Swiss Federal Laboratories for Materials Testing and Research (EMPA) funded the project that was initiated by *Synthes Spine, Oberdorf, Switzerland* (now part of Johnson & Johnson) to develop a **musculoskeletal model of the lumbar spine to estimate the maximal segmental forces and torques for testing,** and re-design of motion preserving implants which are utilized in total disc arthroplasty. Using VICON motion capture analysis, the model of the lumbar spine in motion capture from subjects without any history of spine pathology was collected. The lumbar spine's load-bearing characteristics were determined by integrating the kinematics data into the musculoskeletal model on MSC.ADAMS software. High trunk loading rate can cause compressive and shear joint loads to exceed the safe limit of the lumbar spine, which could lead to low back pain. Other outcomes of this dissertation were the effect of the dynamic loads and the role of synovial facet constraint on the load-bearing characteristic of the intervertebral disc and ligaments and the calculation of the instantaneous center of rotation of a multibody model (Publications).

The University of Western Ontario, London, ON., Canada [09/1999-06/2001]
The Hand and Upper Limb Centre
M.E.Sc. in Mechanical Engineering
Thesis: "**A Non-Invasive Approach to measuring three-dimensional bone kinematics**"

- Used ICP (iterative closest point) algorithm and a quaternion to calculate the kinematics of the forearm

Supervisors: Profs. George Knopf & Jim Johnson
Toronto Metropolitan University (Ryerson University), Toronto, ON., Canada [09/1993-10/1997]
B.Eng. in Mechanical Engineering
Areas of Concentration: Fluid Dynamics, HVAC, Controls
Thesis: "**A Comparative Study of Proportional-Integral (PI) Control and Fuzzy Logic Control (FLC)**"

Dr. Alireza Abouhossein
aabouhos@uwo.ca Curriculum Vitae

ACADEMIC EXPERIENCE

Shahid Beheshti University of Medical Science, Tehran, Iran [12/2018-Present]
Department of Ergonomics
Assistant Professor (Biomechanical Engineering) (Elite Professor)

Iran University of Medical Science, Tehran, Iran [03/2018-12/2018]
School of Ergonomics (Biomechanical Engineering)
Visiting Senior Research Fellow commissioned by National Elite Foundation (Bonyad Melli Nokhbegan)

- Project: Effect of the follower load on cervical spine injuries: buckling modes: A simulation study

University of Leeds, Leeds, UK [10/2013-10/2016]
School of Mechanical Engineering, Mechatronics and Robotics Institute of Design, Robotics, and Optimisation (iDRO)
Post-doctoral Research Fellow
Project: biomimetic, self-tuning, fully adaptable smart lower limb prosthetics with energy recovery (Smart Bio-Leg)

- Funded as a first-class project by EPSRC (Engineering, Physical, and Science Research Council) for the value of over £600,000
  - Development of the protocol for motion-based data capture and sEMG and analyzing the data
  - Multi-body simulation study and integration of experimental data to the simulation data
  - Using 3D printing to fabricate prosthetic and exoskeleton parts
  - Publication of Journal and conference papers
  - Co-supervisor and supervisor of several summer students, graduates, and Ph.D. students
  - Teaching robotics, neural networks, and solid mechanics courses

The University of Bologna, IT [08/2011-07/2013]
Department of Electrical, Computers, and System Engineering
Bologna, Italy
Post-doctoral Research Fellow

- Project: DEPICT: addressing the shortcoming of assistive devices related to elderly fall
  Project funded by the Ministry of the Health of the province Emilio-Romania to address the use of technology to prevent falls in the elderly population.
- Worked on postural stability of the elderly during mobility
- Monitor elderly mobility using IMU & mobile robotic platform
- Co-supervision of graduate students
- Teaching automatic systems control and biomechanics

Orthopaedic and Injury Biomechanics Group [03/2011-06/2011]
University of British Columbia
Vancouver, Canada
Research Assistance

- Project: Pro-Neck-Tor: A novel helmet that reduces neck injuries in near-crown impacts
- I was involved in testing and developing a model of the Pro-Neck-Tor helmet

Swiss Federal Laboratories for Materials Testing and Research [10/2005-10/2010]
(Laboratory for Mechanical Systems Engineering: Ph.D. research work)
Dübendorf, Switzerland &
University of Bern
Institute for Surgical Technology & Biomechanics
Research Assistant/Spine Research Coordinator

- Setting up a motion capture laboratory for use in EMPA

- Developed motion capture protocol for the investigation of joint torque due to upper trunk loading rate and effect on the lumbar spine, data from VICON motion capture system and a force plate (Bertec, AMTI) were integrated into a multibody model of human
- Data processing analysis from the hip joint impingement study
- Presentation to stockholders
- Co-Supervised three bachelor's students in their biomechanics project

Sunnybrook Centre for Independent Living (SCIL) at Sunnybrook Hospital [04/2002 -08/2002]
Toronto, Ontario, Canada
Research Assistant to Prof. Brain Maki

- Investigated and analyzed stability parameters affecting the human falling mechanism. The parameters were intended to be incorporated into a neuro-fuzzy optimization system to simulate the falling process of the elderly. A report was submitted by the end of the study.

Toronto Metropolitan University (Ryerson University)
[1996 -1997]
Department of Mechanical Engineering
Toronto, Ontario, Canada
Research Assistant

- Project: Digital Image Correlation Using Newton-Raphson Method of partial differential correlation to measure strain and stress using a None-Destructive method." (A non-destructive test to evaluate mechanical effects of the heat on an engine part, project commissioned by FORD Company, Canada.)
- My duty was to come up with a method to measure the strains on the newly designed Ford-Canada PCB to measure the temperature inside the combustion engine.

INDUSTRIAL EXPERIENCE

KYA Engineering Co. (Sole agent of ITT FLYGT Company in Iran) [04/2004- 04/2005]
Tehran, Iran
Sales Engineer/Control/Mechanical Engineer

- Sales and marketing of submersible pump with its corresponding control & monitoring system (SCADA & FMS)
- Implemented stepper switch for a pumping station to the alternate function of installed pumps using LOGO Siemens controller,
- the proposed control system reduced the control system costs by more than 50%
- Researched innovative and financially effective control systems for water pumping stations
- The best mixer and submersible pump were picked and suggested to the customer based on optimal engineering rules

Saravel Corporation (www.saravel.com) [09/2002- 04/2004]
Tehran, Iran
Mechanical Designer

- Analysis and automated fan-coil sub-assembly production lines
- Conducted pressure vessels parts design based on ASME DIV I standards using Codes developed in MATHCAD
- Investigated new products to improve Saravel manufacturing production lines
- Designed of inner groove bullet to increase the rate of heat exchange in copper pipes
- Supervised three co-op students

ATS Automation Tooling Systems Inc. (www.atsautomation.com) [06/2001 -01/2002]
Cambridge, Ontario, Canada

Systems Integrator Engineer

- Assisted in the design, implementation, and installation of high-accuracy robotic assembly machines
- for high-technology industries
- Designed, selected, tested, and integrated hardware components such as robots, grippers (EAT),
- load cells, motion controllers, sensors, and vision systems to automate high-precision technologies
- Investigated new products and improve existing product
- Programmed and worked with PMAC controller for robot actuators
- Solved real-time vision problems for certain automation operations by suggesting an enhanced methodology
- Oral presentation of results and solutions to clients' integration systems/ Contacting clients regarding engineering issues and status of projects

All-Season Equipment DIV. ESKO Mfg Ltd [06/1998 -09/1998]
Oakville, Ontario, Canada
Mechanical Engineer
Project: Calculation of maximal forces and torques for an articulated robotic arm to evaluate internal stresses caused by fracture of the industrial robotic arm from its stand.

INVITED TALKS

- Special guest invited to talk on the topic "**Rehabilitative Biomechanics and Assistive Wearable Robotic or Protective Devices to Reduce Injury"** in International Workshop of Engineering in Medicine at Sultan Qaboos University, Department of Mechanical and Industrial Engineering, Muscat, Oman (Dec.2022) (English)
- How to get international funds for advanced study in Engineering and prototype making, University of Lorestan, Iran, International Day of Laboratory (https://m5.gs/MjNsam) (June 2022)
- Assistive wearable robotics, 3rd International Iranian Ergonomics webinar, & the 4th Biennial Iranian Webinar on ergonomics (English)
- Biomechanics, ergonomics, and physiotherapy a road map invited talk in the 32nd International Congress of Iranian Physiotherapists, 27-28 Jan 2022 (Persian)
- OpenSim 4.1: an introductory talk on different aspects of the software, 1st international conference on Iran motion analysis, 17th & 18th December 2020, University of Social Welfare and Rehabilitation (English).

MEDIA & PUBLIC ENGAGEMENT

- Reboot your career with a job in robotics – live chat | Live Q&A | The Guardian
- National Intelligent Robotics Prototype Workshop (https://www.youtube.com/watch?v=ilIGHxOom0k&list=WL&t=6s&index=4)
- Regular sandpit meetings with amputees and the public to address amputees' challenges in Leeds, UK
- Student tutors and starting members of after-school makeup tutorials, a Central library of Waterloo, Canada
- Interviewed as leading biomechanist for the ergonomics student magazine in Iran (https://www.linkedin.com/feed/update/urn:li:activity:6889970298381221889/)

TEACHING ACTIVITIES (AVERAGE STUDENTS' FEEDBACK ON MY PERFORMANCE 90%)

Tehran University of Medical Sciences, Tehran, Iran
Ergonomics Design (Visiting Professor) Winter 2022

Shahid Beheshti University of Medical Sciences, Tehran, Iran (All of the courses below, I was module leader)

Ergonomics Design: A multidisciplinary approach in design: Winter-Spring 2019, 2020, 2021, 2022, 2023
Workshop on MATLAB modeling: 2023
Engineering Mechanics: Static and Dynamics: 2021, 2022
Business Planning for Entrepreneurship classes: 2021, 2022
Engineering Drafting & Design: 2022
Biomechanics for physiotherapists: Winter 2022
Special Topics in rehabilitation ergonomics, prosthesis, orthoses, and exoskeleton: Fall 2020, 2021,2022
The Musculoskeletal Diseases & Disorders Upper & Lower Extremities: Winter-Spring 2020
Occupational Biomechanics: Winter-Spring 2019, 2020, 2021, 2022, 2023
Manufacturing Processes & Technologies 1, 2 and general (Lecturer): 2019, 2020,2021,2022
Physical Assessment in Ergonomics: 2019,2020, 2021, 2022, 2023
Technical English in Ergonomics: 2019, 2020, 2021, 2022, 2023
Mathematics I for Public Health and Safety Engineering: 2019,2020,2021,2022
Mathematics I for Industrial Engineering: 2020, 2021, 2022
A Short Course on EEG and its Applications: 2018, 2019

The Iran University of Medical Science, Tehran, Iran

General Calculus for Ergonomic Students (Lecturer): Fall Semester 2018
Principles of Ergonomics and Human Factors in Design (Lecturer): Winter Semester – 2018

The University of Leeds, Leeds, UK

MECH1230 (co-tutor): Semester 1- 2015
Undergraduate Solid Mechanics (static, dynamics, and strength of materials)

MECH5605M (Co-lecturer) Semester 1-2015
Biomechatronics and Medical Robotics, Principles of Fuzzy Logic and Neural Networks with Applications in Robotics

MECH3460 (Co-lecturer, Co-tutor): Semester 1,2-2013 to 2016
Robotics and Machine Intelligence

The University of Bologna, Bologna, Italy

Automatic Control and System Theory M (Adjunct Professor, Co-lecturer/ Co-tutor): Semester-2 2012

- Graduate Course in AlmaTong program (A joint program between the University of Bologna and Tongji University (Shanghai, China)
- University of Bologna my website: http://www-lar.deis.unibo.it/people/alireza/CAT.html

University of Bern, Switzerland

Tissue Biomechanics (co-tutor) 2009
Bone, joint, synovial joint, ligament, cartilage, spine, tendon, and muscle biomechanics

University of Western Ontario, London, ON, Canada

MME2259 (tutor): Semester 1, 2 1999-2001
Product Design and Development

MME 4452(tutor): Semester 1, 2 1999-2001
Robotics and Automated Manufacturing

Ryerson University, Toronto, ON., Canada
MTH 108 - Linear Algebra (tutor)
MTH 207 - Calculus and Computational Methods I (tutor)
MTH 310 - Calculus and Computational Methods II (tutor)
KPS 115 - Physics I (tutor)
MEC 222 - Engineering Graphical Communication (tutor)
MEC 311 - Dynamics (tutor)

STUDENT ADVISING AND MENTORING

Zahra Ansari, Master of Science in Ergonomics,
Shahid Beheshti University of Medical Sciences Mar. 2022- Present
Dissertation: Human-centered design and ergonomic evaluation of a crochet hook handle
Role: Main advisor

Nafiseh Nasouhi, Master Science in Ergonomics Mar. 2020- June 2022
Shahid Beheshti University of Medical Sciences
Dissertation: Effect of rocker bottom footwear on Achilles tendon load in diabetic patients during walking
Role: Main advisor

Mohadese Kafi, Master of Science in Ergonomics Mar. 2019-Feb. 2022
Shahid Beheshti University of Medical Sciences
Dissertation: Design & Simulation of an Ergonomic Gripper for Harvesting Saffron Flower
Role: Main advisor

Hafiz Farhan Maqbool, Ph.D. student Oct. 2013- June 2017
University of Leeds
Dissertation: Real-Time Estimation of Temporal Gait Parameters in Lower Limb Amputees using Inertial Sensors
Role: Co-advisor

Liam Davis summer internship, 2015, 2016
University of Leeds
Gait data acquisition, and analysis using visual 3D software
Pelvis Rotation and Effect on Amputees' Gait
Role: Advisor/Mentor

David Maher Summer internship, 2016
University of Leeds
Parametrized human Gait model, Co-simulation of human gait MSC.ADAMS-MATLAB
Role: Advisor/Mentor

Joe Anderson, Summer Internship 2014
University of Leeds
Model Development of Walking in MSC.ADAMS environment
Role: Advisor

Pouyan Mehyar, Ph.D. Student Oct. 2013-Aug. 2019

University of Leeds
Dissertation: Neural connectivity for the future generation of prosthetic devices
Role: Member of advising the committee

Muhammad A. Husman, Ph.D., Jan. 2014-Mar. 2018
University of Leeds
Dissertation: Development of a haptic feedback system for transfemoral amputees
Role: Member of advising the committee

Carl Crisp, Masters. Oct. 2014- Jul. 2018
University of Leeds
Thesis: Postural balance in lower extremity prosthetic leg users
Role: Co-Advisor, Mentor

Cinzia Farneti, Master of Science Engineering Jan. 2012-Jan. 2013
University of Bologna
Thesis: Low-level control of companion robot
Role: Advisor

David Peretz, B.Sc. Sept. 2006-2007
From Rensselaer Polytechnique Institute visiting EMPA Summer of 2008
Internship topic: 2D-Analysis of squat data captured by NDi and AMTI force platform
Role: Co-Advisor

Co-advisor of several students in the Department of Mechanical Engineering at the University of Western Ontario, London, ON., CA during 2000-2001

CHAPTER IN THE BOOK

Abouhossein, A., Martinez-Hernandez, U., Awad, M. I., Mahmood, I., Yilmaz, D., & Dehghani-Sanij, A. A. (2020). Assistive Gait Wearable Robots—From the Laboratory to the Real Environment Reinventing Mechatronics (pp. 75-92): Springer. (DOI: https://doi.org/10.1007/978-3-030-29131-0_6), IF 4.996

PEER-REVIEWED JOURNAL PUBLICATIONS

Sajjad Rostamzadeh, Alireza Abouhossein, Mahnaz Saremi, Fereshteh Taheri, Mobin Ebrahimian, Shahram Vosoughi "A comparative investigation of machine learning algorithms for predicting safety signs comprehension based on socio-demographic factors and cognitive sign features", Nature: Scientific Reports, accepted, July 2023, https://doi.org/10.1038/s41598-023-38065-1.

Sajjad Rostamzadeh, Alireza Abouhossein, Shahram Vosoughi, Saeid Bahramzadeh Gendeshmin, Rasoul Yarahmadi "Stress influence on real-world driving identified by monitoring heart rate variability and morphologic variability of ECG Signals: The case of intercity roads", Submitted to *International Journal of Occupational Safety and Ergonomics*, Under review since Nov. 2022

Saeed Ghaneh-ezabadi, Mohammad Abdoli-eramaki, Navid Arjmand, Alireza Abouhossein, and Seyed Abolfazl Zakerian, *"*The validity and inter-rater reliability of a video-based posture-matching tool to estimate cumulative loads on the lower back*"* Submitted to Journal of biomedical physics and Engineering, Accepted (2022), 10.31661/jbpe.v0i0.2203-1474, Impact Factor 1.41

Awais Naeem, Hafiz F. Maqbool, A. Abouhossein, Abbas A. Dehghani-Sanij *"Virtual Constraint Control of Knee-Ankle Prosthesis using an Improved Estimate of the Thigh Phase-Variable", submitted to* Biomedical Signal Processing & Control Journal, Accepted, (2022), https://doi.org/10.1016/j.bspc.2021.103366, Impact factor 3.88

Sajjad Rostamzadeh, Alireza Abouhossein, Mohammad Hossein Chalak, Shahram Vosoughi, Roya Norouzi An integrated DEMATEL-ANP approach for identification and prioritization of factors affecting falls from height accidents in the construction industry, *International Journal of Occupational Safety and Ergonomics* (JOSE), IF 2.4, (2022), https://doi.org/10.1080/10803548.2022.2052479

Sajjad Rostamzadeh, Mahnaz Saremi, Alireza Abouhossein, Shahram Vosoughi, Johan F.M. Molenbroek, *"Normative data for handgrip strength in Iranian healthy children and adolescents aged 7-18 years: Comparison with international norms*", Italian Journal of Pediatrics, DOI: 10.1186/s13052-021-01113-5, (Impact factor 2.185)

Hiro Kaleh, Mostafa Pouyakian, Korosh Etemad, A.Abouhossein, "*Developing a safety rating algorithm for administrative buildings using Fuzzy Analytical Hierarchy Process (FAHP)*", Journal of Iran Occupational Health, Persian, (2021), https://10.52547/ioh.18.1.302

A. Abouhossein, Mohammed I Awad, Hafiz F. Maqbool, Carl Crisp, Todd D. Stewart and Neil Messenger, R. Richardson, Abbas A. Dehghani-Sanij, David Bradley, (2019) "*Foot trajectories and loading rates in a transfemoral amputee for six different commercial prosthetics knees: an indication of adaptability*". Journal of Medical Engineering and Physics, (https://doi.org/10.1016/j.medengphy.2019.03.014). (Impact factor 1.819)

H. F. Maqbool, M. A. B. Husman, M. I. Awad, A.Abouhossein, N. Iqbal, Member, IEEE, and A. A. Dehghani-Sanij, "*Heuristic real-time detection of temporal gait events for lower limb amputees", IEEE Sensors Journal*, (2018),(*DOI:* 10.1109/JSEN.2018.2889970) (Impact factor 2.512).

H. F. Maqbool*,* M. A. B. Husman, M. I. Awad, A.Abouhossein*,* Nadeem Iqbal, and A. A. Dehghani-Sanij *"A Real-Time Gait Event Detection for Lower Limb Prosthesis Control and Evaluation", IEEE-Journal of Neural Systems and rehabilitation*, (2016)(10.1109/TNSRE.2016.2636367) (Impact Factor 3.410)

Zhen W L., M. I Awad, A. Abouhossein, A. A. Dehghani and N. Messenger, "*Virtual prototyping of a semi-active transfemoral prosthetic leg*", IMechE, Part H: Journal of Engineering in Medicine, 229(5): 350-361 (2015). (DOI: 10.1177/0954411915581653) (Corresponding author) (Impact Factor 1.005)

H. Maqbool, P. Mehryar, M. Husman, M. Awad, A.Abouhossein, and A. Dehghani-Sanij, "Towards Intelligent Lower Limb Prostheses with Activity Recognition, (2015)" *Towards Autonomous Robotic Systems*. vol. 9287, C. Dixon and K. Tuyls, Eds., ed: Springer International Publishing, 2015, pp. 180-185. (DOI 10.1007/978-3-319-22416-9_21) (Proceeding book)

A.Abouhossein, B. Weisse, Stephen J. Ferguson, "*Quantifying the center of rotation pattern in a multi-body model of the lumbar spine*", Journal of Computer Methods in Biomechanics and Biomedical Engineering, March 2012 (DOI**:** 10.1080/10255842.2012.671306) (Impact Factor 1.909)

A.Abouhossein, B. Weisse, Stephen J. Ferguson, "*A multibody modeling approach to determine load sharing between passive elements of the lumbar spine*", Journal of Computer Methods in Biomechanics and

Biomedical Engineering, 2011 April 1; 16(6). (Featured on the cover of the respective journal) (DOI:10.1080/10255842.2010.485568) (Impact Factor 1.909)

CONFERENCE ORGANIZATIONAL COMMITTEE

- Steering Committee of International Students Conference 2006, EMPA, Dubendorf
- Biomimetic and Biohybrid Systems 8th International Conference, Living Machines, Nara, Japan, July 9–12, 2019

PEER-REVIEWED CONFERENCE PUBLICATIONS

Zahra Ansari, Alireza Abouhossein, "Design an ergonomic arm support cushion for crocheting", in International Workshop of Engineering in Medicine at Sultan Qaboos University, Department of Mechanical and Industrial Engineering, Muscat, Oman (Dec.2022)

Nafiseh Nasouhi, Alireza Abouhossein, Mohammad Abdoli-Eramaki, "Effect of Rocker type footwear on Achilles' tendon load in diabetic patients during walking "World Congress of Biomechanics, Accepted for podium presentation, June 2022

Nafiseh Nasouhi, Alireza Abouhossein," Effect of Ergonomics Insole on Lower Limb Muscle Activity and Forces in Patients with Diabetic Peripheral Neuropathy using OpenSim Software", CAM-Knee OpenSim Conference, ETHZ, Zurich, Switzerland, 4-7 Feb.2020

A. Abouhossein, Uriel Martinez-Hernandez, Mohammed I. Awad, David Bradley, Abbas A. Dehghani-Sanij, "Human-activity-centered measurement system: challenges from laboratory to the real environment in assistive gait wearable robotics", Mechatronics Conference 2018, Glasgow, IET and IME-UK, SEPT. 2018, Accepted for podium presentation and full publication in the proceeding.

A. Abouhossein, M. I. Awad, C. Crisp, A. A. Dehghani-Sanij, N. Messenger, T.D. Stewart, O. M. Querin, R. Richardson, D. Bradley," Gait abnormalities of above-knee amputees, is it a design deficiency or compensatory strategy?", submitted in International Conference on neurorehabilitation, Segovia, Spain, 18-21 Oct. 2017, accepted for podium presentation, Published in the Taylor and Francis proceeding.

M. I. Awad, A. Abouhossein, B. Chong, A. A. Dehghani-Sanij, R. Richardson, D. Moser, and S. Zahedi, "Investigation into Energy Efficiency and Regeneration in an Electric Prosthetic Knee", submitted in International Conference on neurorehabilitation, Segovia, Spain, 18-21 Oct. 2017, accepted for podium presentation.

M. I. Awad, A. Abouhossein, A. A. Dehghani-Sanij, R. Richardson, O. M. Querin, Estimation of Actuation System Parameters for Lower Limb Prostheses, Mechatronics-REM conference, Compiègne, France 2016, Accepted for publication with minor revision

M. I. Awad, A. Abouhossein, A. A. Dehghani-Sanij, R. Richardson, D. Moser, S. Zahedi, D. Bradley," Towards a Smart Semi-Active Prosthetic Leg: Preliminary Assessment and Testing, UKSIM conference 2016, Cambridge, UK (accepted for publication, Podium presentation)

Hafiz F. Maqbool, Muhammad A. B. Husman, Mohammed I. Awad, Alireza Abouhossein, Nadeem Iqbal and Abbas A. Dehghani-Sanij "Stance Sub-Phases Gait Event Detection in Real-time for Ramp Ascent and Descent", International conference on neurorehabilitation, ICN2016, submitted, (accepted, oral presentation)

A. Abouhossein, M. Awad, C. Crisp, A. Dehghani-Sanij, N. Messenger, T. Stewart, O. Querin, R. Richardson, and D. Bradley, "Effect of different prosthetic knees/foot on the Roll-over shapes", in 38th Annual International Conference of the IEEE Engineering in Medicine and Biology Society (EMBC), Orlando, FL, USA, 16-20 August 2016. (Poster presentation)

H. Maqbool, M. Husman, M. Awad, A. Abouhossein, N. Iqbal, and A. Dehghani-Sanij, "Real-time gait event detection for lower limb amputees using a single wearable sensor", in 38th Annual International Conference of the IEEE Engineering in Medicine and Biology Society (EMBC), Orlando, FL, USA, 16-20 August 2016. (Podium presentation)

M. Husman, H. Maqbool, M. Awad, A. Abouhossein, and A. Dehghani-Sanij, "A Wearable Skin Stretch Haptic Feedback Device: Towards Improving Balance Control in Lower Limb Amputees", in 38th Annual International Conference of the IEEE Engineering in Medicine and Biology Society (EMBC), Orlando, FL, USA, 16-20 August 2016. (Podium presentation).

A. Abouhossein, M.I. Awad, A.A. Dehghani-Sanij, O.M. Querin, R. Richardson, TD. Stewart, N. Messenger, D. Bradley, D. Moser, S. Zahedi, "Controller design for a Semi-Active Transfemoral Prosthetic Knee based on Angular Velocity Monitoring", CMBBE 2015 Conference, Montreal, Canada, (podium presentation).

A. Abouhossein, M. I. Awad, Crisp Carl, Abbas A. Dehghani - Sanij, Neil Messenger, Todd D. Stewart, O.M. Querin, Robert Richardson, D. Moser, S. Zahedi D. Bradley, "Impact of viscoelastic parameters of a prosthetic ankle on the knee power over level ground walking", 2015 IEEE/RSJ International Conference on Intelligent Robotics and Systems (IROS), Hamburg, Germany (Poster).

H.F. Maqbool, M.A.B. Husman, M. I. Awad, A. Abouhossein, A. A. Dehghani, "Real-time gait event detection for transfemoral amputees during ramp ascending and descending" IEEE/RSJ International Conference on Intelligent Robots and Systems-2015, (podium presentation).

M. I. Awad, A. Abouhossein, T. Stewart, N. Messenger A. A. Dehghani-Sanij, R. Richardson, D. Moser, S. Zahedi;" Estimation of Actuation System Parameters for Lower Limb Prostheses", Submitted to IEEE/EMBC International Conference, Milan, IT, 2015 (Poster)

A. Abouhossein, I. M. Awad, A. Dehghani, N. Messenger, "Understating the mechanism of transient impulsive forces during activities of daily living (ADLs) for amputees and able-bodied subjects", abstract for Royal Academy of Engineering, one of the 25 abstracts picked to give a talk in Young researchers futures meeting Engineering for orthopaedic applications, Sept. 15-18, 2015, Leeds, UK

A. Abouhossein, Lorenzo Marconi, Lorenzo Chiari, Ligaments degeneration May affect body sway in the elderly, ESB 2013, Greece, (podium presentation).

A. Abouhossein, Stephen J. Ferguson, "Lumbar Spine Facet Joint Loads and Effect of Loading Rate in a low Speed rear-end Impact Collision", Submitted to International Symposium on Computer Methods in Biomechanics and Biomedical Engineering (CMBBE) 2013, Utah, (accepted as poster presentation).

A. Abouhossein, Christopher R. Dennison, Daniel Dressler, Peter A. Cripton, "Validation and dynamic responses of a 3-dimensional multibody model of a physical surrogate neck and head under compressive follower load and during axial impact", Canadian Society of Biomechanics, June 2012 (podium presentation)

A. Abouhossein, B. Weisse. G. Piskoty, C. Affolter, Stephen J. Ferguson, "*A Dynamic, multi-body model of the human lumbar spine*", Proceeding of 8th International Symposium on Computer Methods in Biomechanics and Biomedical Engineering (CMBBE) 2008, Porto, Portugal, (podium presentation).

A. Abouhossein, G. K. Knopf, J. A. Johnson, (2001), "Robust Registration of Coordinate Data Sets for Noninvasive Measurements of Bone Kinematics", SMC-IEEE Proceedings, Page(s): 1999 - 2005 vol.3, Tucson, Arizona, U.S.A., (podium presentation)

G. K. Knopf, A. Abouhossein, (2000), "Adaptive Reconstruction of Anatomical Surfaces from Human Body Measurements Using Neural Networks", SMC-IEEE proceedings, Nashville, Tennessee, U.S.A., Pages: 1181 - 1186 vol.2, (podium presentation).

PATENT

A Skin Stretch Haptic Feedback System for Lower Limb Amputees Pending approval of US-patent office

REVIEWING JOBS

Paid Reviewer for a book proposal sent to Elsevier Publication House, titled: *The Biomechanics and mechanobiology of the lumbar spine as Revealed by computational approaches: from research to in silico medicine*

Journal Reviewer

Elsevier: Journal of Computer in Biology and Medicine *(Received Certificate of Excellent reviewer-2016)*
Elsevier: Journal of Biomedical Engineering and Informatics
Springer: Journal of Medical and Biological Engineering (JMBE)
Robotica*: Cambridge publication*
IOPScience*: Smart Materials and Structures*
Sensor*: open access*
MDPI Applied Science*, Journal of Mechanical Engineering*
Proceedings of the Institution of Mechanical Engineers*, Journal of Medical Engineering Part H*

Editorial Board of the International Journal of Engineering and Mathematics
Editorial Board of Foot & Ankle: studies

Conference Reviewer

IEEE-EMCS
IEEE-IROS
IEEE-AIM

MEMBERSHIPS

PEO (Professional Engineers of Ontario)
IEEE (The Institute of Electrical and Electronics Engineers)
European Society of Biomechanics (ESB)

AWARDS AND SCHOLARSHIPS

UK/Japan Mobility Award to travel to Osaka University to attend the RENKEI Interdisciplinary Workshop and tackle projects related to mobility and elderly challenges

25 Young Researchers Future Forum 2014: Engineering for Orthopedic Applications, full payment of 4 days conference, Royal Academy of Engineers, Leeds, UK
Post-Doctoral Fellow at the University of Bologna, health, and government of Emilia Romagna/ University of Bologna
MSC Company awarded free full Dynamics analysis software MSC.ADAMS for best research: Research Assist Program (https://www.mscsoftware.com/sites/default/files/Alireza-Abouhossein.html)
Ph.D. Scholarship (3.5 years) to study at Swiss Federal Laboratories for Materials Testing and Research
Graduate tuition fee waiver scholarship at the University of Western Ontario (M.E.Sc.)

LANGUAGES

English (Fluent), German (Intermediate), Persian (Fluent), Italian (Basic)

ACTIVITIES AND INTERESTS

I enjoy sailing in summer and skiing in winter. From 2009 to 2011 I was a member of the University of British Columbia sailing club where I was involved in volunteering, fund-raising events, and regattas. Volunteer who was involved actively in vaccinating the public in our faculty center against the Covid-19 virus throughout the past year.