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RESEARCH INTERESTS

Biomechanics

- Articular Cartilage
- Application of surface topography in management of scoliosis
- Ergonomics
- Biomechanical modeling
- Finite element analysis

RESEARCH EXPERIENCE

Postdoctoral Fellowship

- Supervisor: Dr. Walter Herzog
Human Performance Laboratory, Department of Kinesiology, University of Calgary, Calgary, AB, Canada 2015\05-Present

Postdoctoral Fellowship

- Supervisors: Dr. M. Al-Hussein & Dr. M. El-Rich
Department of Civil and Environmental Engineering, University of Alberta, Edmonton, AB, Canada 2014\09 - 2015\09

EDUCATION

(Ph.D.) Civil and Environmental Engineering, Biomechanical Group,

University of Alberta, Edmonton, Canada.

Thesis: "Adolescent Idiopathic Scoliosis: Classifying, Assessing, and Monitoring using Surface Topography Asymmetry Analysis". 2010-2014
GPA: 3.9

(M.Sc.) Mechanical Engineering, Applied Design (Stress Analysis)

Amirkabir University of Technology (Tehran Polytechnic), Tehran, Iran.

Thesis: "Static Analysis of Functionally Graded Piezoelectric Beam Using Higher Order Shear Deformation Theory". 2007-2010
GPA: 3.3

(B.Sc.) Mechanical Engineering, Solid Design,

Ferdowsi University of Mashhad, Mashhad, Iran.

GPA: 3.1 2002-2007

COMPUTER SKILLS

- VB, Fortran
- AutoCAD, SolidWorks, CATIA
- HyperMesh, ABAQUS, MATLAB, Wolfram Mathematica
- AnyBody, Geomagic, Mimic
- Microsoft Office, Latex

JOURNAL PUBLICATIONS

- 1- **Komeili, A.**, Westover, L., Parent, E., El-Rich, M., & Adeeb, S. (2015). Correlation between a novel surface topography asymmetry analysis and radiographic data on scoliosis curvatures. *Spine Deformity*, 3, 303-311. <http://doi.org/10.1016/j.jspd.2015.02.002>
- 2- **Komeili, A.**, Westover, L., Parent, E. C., El-Rich, M., & Adeeb, S. (2015). Monitoring for idiopathic scoliosis curve progression using surface topography asymmetry analysis of the torso in adolescents. *The Spine Journal : Official Journal of the North American Spine Society*, 15(4), 743-51. <http://doi.org/10.1016/j.spinee.2015.01.018>
- 3- Hill, S., Sepulveda, E. F., **Komeili, A.**, Trovato, A., Parent, E., Hill, D., Lou, E., Adeeb, S. (2014). Assessing asymmetry using reflection and rotoinversion in biomedical engineering applications. *Proceedings of the Institution of Mechanical Engineers.Part H, Journal of Engineering in Medicine*, 228(5), 523-529.
- 4- **Komeili, A.**, Westover, L. M., Parent, E. C., Moreau, M., El-Rich, M., & Adeeb, S. (2014). Surface topography

- asymmetry maps categorizing external deformity in scoliosis. *The Spine Journal : Official Journal of the North American Spine Society*, 14(6), 973-83.e2. <http://doi.org/10.1016/j.spinee.2013.09.032>
- 5- Islamm, K., Dobbe, A., **Komeili, A.**, Duke, K., El-Rich, M., Dhillon, S., Adeeb, S., Jomha, N. M. (2014). Symmetry analysis of talus bone: A Geometric morphometric approach. *Bone & Joint Research*, 3(5), 139-45. <http://doi.org/10.1302/2046-3758.35.2000264>
 - 6- Trovato, A., **Komeili, A.**, Westover, L., Parent, E., Moreau, M., & Adeeb, S. (2013). Review: Examination of Breast Asymmetry Associated with Adolescent Idiopathic Scoliosis Using Surface Topography Methods. *Journal of Medical and Biological Engineering*, 8(2), 612-617. <http://doi.org/10.5405/jmbe.1706>
 - 7- Zad, S. K. H., **Komeili, A.**, Eslami, M. R., & Fariborz, S. (2012). Classical and generalized coupled thermoelasticity analysis in one-dimensional layered media. *Archive of Applied Mechanics*, 82(2), 267-282. Retrieved from <http://dx.doi.org/10.1007/s00419-011-0555-7>
 - 8- **Komeili, A.**, Akbarzadeh, A. H., Doroushi, A., & Eslami, M. R. (2015). Static Analysis of Functionally Graded Piezoelectric Beams under Thermo-Electro-Mechanical Loads. *Advances in Mechanical Engineering*, 3, 153731-153731. <http://doi.org/10.1155/2011/153731>
 - 9- Doroushi, A., Eslami, M. R., & **Komeili, A.** (2011). Vibration Analysis and Transient Response of an FGPM Beam under Thermo-Electro-Mechanical Loads using Higher-Order Shear Deformation Theory. *Journal of Intelligent Material Systems and Structures*, 22(3), 231-243. <http://doi.org/10.1177/1045389X11398162>

CONFERENCE PRESENTATIONS

- 1- **Komeili, A.**, Li, X., Gul, M., Lewick, J., El-Rich, M. (2015). An Evaluation Method of Assessing the Low Back Muscle Fatigue in Manual Material Handling. 2015 Modular and Offsite Construction [MOC] Summit & 1st International Conference on the Industrialization of Construction [ICIC], Edmonton Canada, (Podium-Presented)
- 2- **Komeili, A.**, Westover, L., Parent, El-Rich, M., Adeeb, S. (2014). Monitoring the Thoracic/Thoracolumbar Scoliosis Curves Progression Using Surface Topography Asymmetry Analysis of the Torso in Adolescents. The 21st International Meeting on Advanced Spine Techniques IMAST21, Valencia Spain, (Podium-Presented)
- 3- **Komeili, A.**, Westover, L., Parent, E., Moreau, M., El-Rich, M., Adeeb, S. (2013). Assessment of torso deformities using 3D markerless asymmetry analysis and its clinical applications. International Society on Scoliosis Orthopaedic Rehabilitation and Treatment, Chicago USA, (Podium)
- 4- Cakiroglu, C., **Komeili, A.**, Adeeb, S., Cheng, J.J.R., Sen, M. (2012). Numerical Analysis of High Pressure Cold Bend Pipe to Investigate the Behaviour Of Tension Side Fracture. Proceedings of the 9th International Pipeline Conference IPC2012, Calgary Canada, (Podium)
- 5- Islam, K., **Komeili, A.**, Adeeb, S., El-Rich, M., Ronsky, J.L., Anderson, J. (2012). Three Dimensional Computational Model for the Study of Patellofemoral Biomechanics. Proceedings of the 10th Computer Methods in Biomechanics and Biomedical Engineering International Symposium, April 11-14, Berlin, Germany (Podium)
- 6- Guden, R., **Komeili, A.**, Vafaeian, B., Werle, J., Adeeb, S., Elrich, M. (2012). Optimal Position of Acetabular Component in Hip Resurfacing-A Finite Element Analysis Study. Proceedings of the European Federation of National Associations of Orthopaedics and Traumatology (EFORT) 13th Congress, May 23-25, Berlin, Germany (Podium)
- 7- **Komeili, A.**, Armin, A., Sedighi, M., and Eslami, M.R., (2009). Static Analysis Of Functionally Graded Piezoelectric Beams Under Mechanical and Electromechanical Loads. International Conference on Computational Science ICCS2009, Portugal, (Podium)
- 8- Hosseinizad, S.K., **Komeili, A.**, SadoughVanini, S.A., Eslami, M.R. (2009). Vibration Characteristics of Shape Memory Alloy Composite Plates. International Conference on Computational Science ICCS2009, Portugal, (Podium)
- 9- Hosseinizad, S.K., Akbarzadeh, A.H., Sedighi, M., **Komeili, A.** (2009). Propagation of Stress Waves in One-Dimensional Laminated Composite Structures, International Conference on Computational Science ICCS2009, Portugal, (Podium)
- 10- **Komeili, A.**, Armin, A., Abbasi, A., and Eslami, M.R. (2009). Analytical and Finite Element Solutions for Bending of Functionally Graded Piezoelectric. 17th Annual International Conference on Mechanical Engineering ISME2009, Tehran Iran, (Podium-Presented)
- 11- Akbarzadeh A.H., **Komeili, A.**, Kiani Y., SadoughVaniniand A., Eslami M.R. (2009). Vibration Analysis of Functionally Graded Plate under Dynamic Mechanical loading. CIMSC'09 (Podium)
- 12- **Komeili, A.**, Hosseinizad S.K., Zamani A., Eslami, M.R. (2010). Classical and Generalized Coupled Thermoelasticity in Functionally Graded Layers. 18th Annual International Conference on Mechanical Engineering ISME2010, Tehran Iran, (Podium-Presented)
- 13- Hosseinizad, S.K., **Komeili, A.**, Akbarzadeh, A.H., Eslami, M.R. (2010). Finite Element Analysis of One-dimensional Classical Coupled Thermoelasticity of a Layered Slab. 18th Annual International Conference on Mechanical Engineering ISME2010, Tehran Iran, (Podium-Presented)
- 14- Hosseinizad, S.K., **Komeili, A.**, Akbarzadeh, A.H., Eslami, M.R. (2010). Numerical Simulation of Elastic and Thermoelastic Wave Propagation in Two-Dimensional Classical and Generalized Coupled Thermoelasticity. 10th Biennial Conference on Engineering Systems Design and Analysis (ESDA 2010), Istanbul Turkey, (Podium)
- 15- **Komeili, A.**, Akbarzadeh, A.G., Hosseinizad, S.K. (2011). Thermomechanical Analysis of A Functionally Graded Rectangular Plate Based on Shear Deformation Theories. The 23rd Canadian Congress of Applied Mechanics

CANCAM2011 (Podium-Presented)

CONFERENCE PRESENTATIONS-ABSTRACT

- 1- Kamal, Z., **Komeili, A.**, Pashazanoosi, A.A., El-Rich, M. (2015). Lattice Finite Element Investigation of the influence of Aging on the Mechanical Characteristics of Human Cervical Vertebra. 21st Congress of the European Society of Biomechanics ESB, Prague, Czech Republic, (Poster)
- 2- Komeili, A., BehzadVafaeian(1), Marwan El-Rich(1), SamerAdeeb(1), Ravi Gudena(2)Finite Element Investigation of the Effects of the Cup Orientation on Implant Load-bearing in Total Hip Resurfacing
- 3- **Komeili, A.**, Parent, E., El-Rich, M., Adeeb, S. (2014). Monitoring Scoliosis Progression using Non-invasive 3D Markerless Symmetry Analysis of Surface Topography Data. 7th World Congress of Biomechanics WCB, Boston USA, (Podium)
- 4- **Komeili, A.**, Parent, E., El-Rich, M., Adeeb, S. (2013).Assessing Adolescent Idiopathic Scoliosis Using Markerless Surface Topography Asymmetry Analysis. 9th Annual Spotlight on Research Breakfast, Alberta Ballroom-Northlands Expo Centre, October 2013 (Poster)
- 5- Islam, K., Dobbe, A., **Komeili, A.**, Duke, K., Dhillon, S., El-Rich, M., Adeeb, S., Jomha, N.M. (2013). Symmetry Analysis of Talus Bone, 60th Annual Meeting of the ORS, Hyatt Regency NewOrleans USA, March (Poster)
- 6- **Komeili, A.**, Adeeb, S. , El-Rich, M. (2013). Adolescent Idiopathic Scoliosis: Classifying, Assessing, and Monitoring using Surface Topography Asymmetry Analysis. CSCE Graduate Student Poster Competition, (Poster)
- 7- **Komeili, A.**, Westover, L., Parent, E., Moreau, M., El-Rich, M., Adeeb, S. (2013).Markerless Surface Asymmetry Analysis of the Torso Can Predict >5° Thoracic Curve Progression in Adolescent Idiopathic Scoliosis. Fourth annual Faculty of Engineering Graduate Research Symposium (FEGRS), June 20, (Podium)
- 8- **Komeili, A.**, Westover, L., Parent, E., Moreau, M., El-Rich, M., Adeeb, S. (2013). A Novel Surface Topography Technique to Evaluate Torso Asymmetry in Adolescent Idiopathic Scoliosis. 13th Annual Scientific Conference of the Canadian Spine Society, Tremblant Canada, (Podium)
- 9- **Komeili, A.**, Adeeb, S. and El-Rich, M. (2011). A Way to Seek the Bijective Mapping of Morphological Changes. Proceedings of the 12th Annual Alberta Biomedical Engineering Conference, Banff, Alberta, Canada, (Provincial-Poster)
- 10- Gudena, R., **Komeili, A.**, Vafaeia, B., Adeeb, S. and El-Rich, M. (2011). Optimum Position of the Acetabular Component in Hip Resurfacing Arthroplasty - A Finite Element Analysis. Proceedings of the 4th Annual Alberta Fellows Research Symposium, May 4th, Calgary, Alberta, Canada. (Provincial-Poster)

SELECTED COURSES

- Solid Mechanics
- Introduction to Finite Element Method
- Continuum Mechanics
- Biomechanical Modeling of Human Tissue & Systems
- Macro Fracture Mechanics
- Structural Analysis
- Dynamics of Structure
- Behavior & Design of Steel Members
- WRS 500

HONORS & AWARDS

- The Eyes High Postdoctoral Scholars, (\$50,000/year) May 2015
- Canadian Society of Biomechanics Conference Grant (\$300) July 2014
- Trainee Travel Funding from WCHRI (\$750) July 2014
- Faculty of Graduate Studies and Research (FGSR) Travel Grant Awards - University of Alberta (\$1300) July 2014
- Second Place- Best Poster Presentation CSCE Graduate Student Poster Competition March 20, 2014
- First Place- Best Poster Presentation CSCE Graduate Student Poster Competition March 21, 2013
- Norman Schachar Research Award, for best research presentation “Finding optimum position and orientation of the implant in total hip resurfacing using Finite Element Analysis.” May 2011

WORK EXPERIENCE

- Teaching assistance, CIV E 398: Introduction to Continuum Mechanics, Dept. of Civil and Environmental Engineering, University of Alberta, Canada
Fall 2013
Fall 2012
Fall 2011
Fall 2010
- Maintenance assistance of the Amirkabir Uni. of Tech. resident for two years. 2008 - 2010
- Teaching Assistant , Dept. of Mechanical Engineering, Montazeri Institution, Dynamics, Dr. Tahani Fall, 2007
- Part time mechanical engineer trainee, Mehriran research and industrial company. 2004\06 - 2004\09

SUPPLEMENTARY PROJECTS

- Optimal Position of Acetabular Component in Hip Resurfacing; A Finite Element Study”, Presented as the MEC E585 Final Project. Winter, 2011
- “Static and dynamic analysis of composite beam using third order shear deformation theory”, Presented as the Composite Structures Project. Winter, 2009
- “Transient Temperature Analysis of FGM Plate using GDQ method”, Presented as the Advanced Numerical Methods Project. Winter, 2008
- "Investigation of Vibration for Exhaust of Peugeot405", Internship Project, Mashhad, Iran. 2005\07 -2005\09

VOLUNTEER ACTIVITIES

- Executive Committee Member, “2015 Modular and Offsite Construction [MOC] Summit & 1st International. 2015\05
- Session chair, “4th Faculty of Engineering Graduate Research Symposium (FEGRS 2013)” 2012\06
- Women in Scholarship, Engineering, Science and Technology (WISEST), Research Supervisor 2012\07 - 2012\08
- Women in Scholarship, Engineering, Science and Technology (WISEST), Research Supervisor (supervising a high school student for nine weeks of research based work, intended to broaden the awareness of careers in areas of study non-traditional for females) 2011\05 - 2011\08
- Poster moderator in “2nd Faculty of Engineering Graduate Research Symposium (FEGRS)” 2011\07
- Fundraising member of the 12th Annual Alberta Biomedical Engineering (BME) conference 2011\06
- Conference Moderator “International Pipeline Conference & Exposition (IPCE 2010)” 2010\10

REFERENCES

Postdoc Supervisors:

- Dr. Walter Herzog, Professor, Dept. of Mechanical Engineering, Dep. of Kinesiology, University of Calgary, Canada, Email: whertzog@ucalgary.ca
- Dr. Mohamed Al-Hussein , Professor, Dept. of Civil and Environmental Engineering, University of Alberta, Canada, Email: malhussein@ualberta.ca
- Dr. Marwan El-Rich, Assistant Professor, Dept. of Civil and Environmental Engineering, University of Alberta, Canada, Email: elrich@ualberta.ca

Ph.D. Supervisors:

- Dr. Samer Adeeb, Associate Professor, Dept. of Civil and Environmental Engineering, University of Alberta, Canada, Email: Adeeb@ualberta.ca
- Dr. Marwan El-Rich, Assistant Professor, Dept. of Civil and Environmental Engineering, University of Alberta, Canada, Email: elrich@ualberta.ca

M.Sc. Supervisor:

- Dr. Mohammad Reza Eslami, Professor, Dept. of Mechanical Engineering, Amirkabir University of Technology (Tehran Polytechnic). Tehran, Iran. Email: eslami@aut.ac.ir