Antonis P. Stylianou, Ph.D.

Civil and Mechanical Engineering
University of Missouri – Kansas City
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EDUCATION

University of Kansas **2004**
Ph.D. in Mechanical Engineering (Honors)
Dissertation title: *Local Muscle Fatigue of Elbow Flexors: SEMG Analysis and Effects on Motor Control Performance.*
Advisor: Carl W. Luchies, Ph.D.

University of Kansas **2012**
M.S. in Mathematics (Honors)
Thesis title: *Modeling the Golf Swing.*
Advisor: David E. Lerner, Ph.D.

University of Kansas **2000**
M.S. in Mechanical Engineering (Honors)
Thesis title: EMG Signal Processing Using the Maximum Likelihood Method.
Advisor: Carl W. Luchies, Ph.D.

University of Kansas **1998**
B.S. in Mechanical Engineering

EXPERIENCE

University of Missouri – Kansas City **Kansas City, MO**
Civil and Mechanical Engineering August 2014 - present
Assistant Professor
- Director, Musculoskeletal Biomechanics Research Laboratory.
- Teach undergraduate and graduate courses in Mechanical Engineering and Biomechanics.

University of Missouri – Kansas City **Kansas City, MO**
Musculoskeletal Biomechanics Research Laboratory June 2010 – July 2014
Research Associate
Advisor: Trent M. Guess, Ph.D.
- Musculoskeletal biomechanics, joint contact forces in the knee during dynamic activities.
- Multi-body modeling of the canine stifle.
- Elbow joint biomechanics and modeling.

University of Missouri – Kansas City **Kansas City, MO**
Civil and Mechanical Engineering August 2010 – May 2014
Adjunct Professor
- Engineering Mathematics.
- Differential Equations for Engineers.

University of Kansas **Lawrence, KS**
Mathematics August 2007 – May 2010
Lecturer
- Pre-calculus.
- Calculus II.

University of Kansas Medical Center **Kansas City, KS**
Human Performance Laboratory, Landon Center on Aging May 2004 – May 2007
Post-Doctoral Fellow

- Motor control alterations in Parkinson's disease.
- Skilled training rehabilitation in stroke patients.
- Nonlinear time series analysis of surface electromyography.

University of Kansas **Lawrence, KS**
Mechanical Engineering August 2004 – December 2004
Lecturer

- Mechanical engineering measurements and experimentation.

University of Kansas **Lawrence, KS**
Biodynamics Research Laboratory June 1998 – May 2004
Graduate Research Assistant

University of Kansas **Lawrence, KS**
Mechanical Engineering August 1998 – May 2002
Graduate Teaching Assistant

HONORS

Fullbright Scholarship	1994 - 1998
Pi Tau Sigma, Honorary Mechanical Engineering Fraternity	1998
Zimmerman Graduate Fellowship	1999
Strobel Graduate Scholarship	2000
Carey Graduate Fellowship	2000 - 2003
Florence Black Teaching Excellence Award, Department of Mathematics, University of Kansas	2009
Ralph Byers Outstanding Graduate in Numerical Analysis Award, Department of Mathematics, University of Kansas	2010
1st Runner Up, American Society of Mechanical Engineers Summer Bioengineering Conference Grand Challenge Competition	2013
University of Missouri – Kansas City, School of Computing and Engineering Teaching Excellence Award	2016-2017

PUBLICATIONS

Journal Articles

1. Rahman M, Renani MS, Cil A, **Stylianou AP**, Musculoskeletal Model Development of the Elbow Joint with an Experimental Evaluation. (Accepted in Bioengineering)
2. Renani MS, Rahman M, Cil A, **Stylianou AP**, Calibrating Multibody Ulno-Humeral Joint Cartilage Contact Parameters Using a Finite Element Model (Accepted in Multibody Dynamics).
3. Renani MS, Rahman M, Cil A, **Stylianou AP,** (2017), Ulna-humerus Contact Mechanics: Finite Element Analysis and Experimental Measurements Using a Tactile Pressure Sensor., *Medical Engineering and Physics,* doi:10.1016/j.medengphy.2017.08.010.
4. Rahman M, Cil A, **Stylianou AP**, (2016), Prediction of Elbow Joint Contact Mechanics in the Multibody Framework, *Medical Engineering and Physics,* doi:10.1016/j.medengphy.2015.12.012.
5. Rahman M, Cil A, Bogener JW, **Stylianou AP**, (2016), Lateral Collateral Ligament Deficiency of the Elbow Joint: A Modeling Approach, *Journal of Orthopaedic Research,* doi: 10.1002/jor.23165.
6. Guess TM, Razu SS, Jahandar H, **Stylianou AP**, (2015), Predicted Loading on the Menisci during Gait: The Effect of Horn Laxity, *Journal of Biomechanics*, 48(8):1490-1498.
7. Guess TM, **Stylianou AP**, Kia M, (2014), Concurrent Prediction of Muscle and Tibiofemoral Contact Forces During Treadmill Gait, *Journal of Biomechanical Engineering* 136(2):021032.
8. Kia M, Guess TM, **Stylianou AP**, (2014), Evaluation of a Musculoskeletal Model with Prosthetic Knee through Six Experimental Gait Trials, *Medical Engineering and Physics* 36(3):335-344.

9. **Stylianou AP**, Guess TM, Cook J, (2014), Development and Validation of a Multibody Model of the Canine Stifle Joint, *Computer Methods in Biomechanics and Biomedical Engineering,* 17:370-377.
10. **Stylianou AP**, Guess TM, Kia M, (2013), Multibody Muscle Driven Model of an Instrumented Prosthetic Knee During Squat and Toe Rise Motions, *Journal of Biomechanical Engineering* 135(4):041008.
11. Guess TM, **Stylianou AP**, (2012), Simulation of Anterior Cruciate Ligament Deficiency in a Musculoskeletal Model with Anatomical Knees, *Open Biomedical Engineering Journal* 6:23-32.
12. King GW, Luchies CW, **Stylianou AP**, Kluding PM, Jernigan SD, (2012), Effects of Age and Localized Muscle Fatigue on Torque Development in Knee Extensors and Ankle Plantarflexors, *Journal of Geriatric Physical Therapy* 35(1):8-14.
13. **Stylianou AP**, Luchies CW, McVey MA, Maletsky RA, Lyons KE, Pahwa R, (2011), Postural Sway in Patients with Mild to Moderate Parkinson's Disease, *International Journal of Neuroscience* 121(11):614-621.
14. McVey MA, **Stylianou AP**, Luchies CW, Lyons KE, Pahwa R, Jernigan SD, Mahnken JD, (2009), Early Biomechanical Markers of Postural Instability in Parkinson's Disease: A Pilot Study, *Gait and Posture* 30(4):538-542.
15. Dancause N, Duric V, Barbay S, Frost SB, **Stylianou AP**, Nudo RJ, (2008), An Additional Motor-related Field in the Lateral Frontal Cortex of Squirrel Monkeys, *Cerebral Cortex* 18(12):2719-2728.
16. Stowe AM, Hughes-Zahner L, **Stylianou AP**, Schindler-Ivens S, Quaney BM, (2008), Between-Day Reliability of Upper Extremity H-reflexes, *Journal of Neuroscience Methods* 170(2):317-323.
17. King GW, Luchies CW, **Stylianou AP**, Schiffman JM, Thelen DG, (2005), Effects of Step Length on Stepping Responses Used to Arrest a Forward Fall, *Gait and Posture* 22:219-224.
18. **Stylianou AP**, Luchies CW, Lerner DE, King GW, (2005), The Use of Correlation Integrals in the Study of Localized Muscle Fatigue of Elbow Flexors During Maximal Efforts, *Journal of Electromyography and Kinesiology* 15:437-443.
19. Kim SH, Pohl PS, Luchies CW, **Stylianou AP**, Won YS, (2003), Ipsilateral Deficits on Targeted Movements After Stroke, *Archives of Physical Medicine and Rehabilitation* 84(5):719-724.
20. Luchies CW, Won YS, Schiffman JM, **Stylianou AP**, (2000), Age Effects of Postural Control Mechanisms: The Upper Extremities, *Journal of the American Aging Association* July.
21. Luchies CW, **Stylianou AP**, Won YS, Effects of Age on the Utilization of Lower and Upper Extremity Responses for Balance Recovery, *Gait and Posture* S9 July.

Journal Articles (In Process)

1. Rahman M, Cil A, **Stylianou AP**, A Modeling Approach to Simulating Medial Collateral Ligament Deficiency of an Elbow Joint, (Under Review)
2. Renani MS, Rahman M, Cil A, **Stylianou AP**, Falling onto an Outstretched Hand: A Multibody Model of a Common Injury (In preparation)
3. Karademir G, Bachman D, **Stylianou AP**, Cil A, Posteromedial Incongruity of the Elbow: A Computational Kinematics Study (Under Review)

Conference Papers

1. Rahman M, Renani MS, Cil A, **Stylianou AP**, (2017), Muscle Driven Elbow Joint Simulation in a Multibody Framework, *Summer Biomechanics, Bioengineering, and Biotransport Conference*, Tuscon, AZ.
2. Renani MS, Rahman M, Cil A, **Stylianou AP**, (2017), Material Sensitivity Analysis of Elbow Joint Cartilage Parameters in a Finite Element Model, *Summer Biomechanics, Bioengineering, and Biotransport Conference*, Tuscon, AZ.
3. Karademir G, Bachman D, **Stylianou AP**, Cil A, (2017), Posteromedial Incongruity of the Elbow: A Computational Kinematics Study, *American Shoulder and Elbow Surgeons Annual Meeting,* New Orleans, LA.
4. Renani MS, Rahman M, Cil A, **Stylianou AP**, (2016), Ulna-Humerus Contact Mechanics: Multibody Approach using a Finite Element Model and Experimental Measurements, *American Society of Biomechanics Annual Meeting,* Raleigh, NC.
5. Rahman M, Cil A, **Stylianou AP**, (2016), A Modeling Approach to Studying Medial Collateral Ligament Deficiency of the Elbow Joint, *American Society of Biomechanics Annual Meeting,* Raleigh, NC.
6. Renani MS, Rahman M, Cil A, **Stylianou AP**, (2016), Calibrating Multibody Elbow Cartilage Parameters using a Finite Element Model, *Orthopaedic Research Society Annual Meeting,* Orlando, FL.

7. Renani MS, Rahman M, Cil A, **Stylianou AP**, (2015), Falling onto an Outstretched Hand: A Multibody Model of a Common Injury, Biomedical Engineering Society Annual Meeting, Tampa, FL.
8. Rahman M, Cil A, **Stylianou AP**, (2015), Simulating Ligament Deficiency for an Anatomical Elbow Joint in a Multibody Framework, Biomedical Engineering Society Annual Meeting, Tampa, FL.
9. Rahman M, Cil A, **Stylianou AP**, (2015), Prediction of Elbow Joint Contact Pressures in the Multibody Framework, *Summer Biomechanics, Bioengineering, and Biotransport Conference,* Snowbird. UT.
10. **Stylianou AP**, Razu SS, Jahandar H, Bloemker KH, Cil A, Guess TM, (2015), Ligament Resting Length: A Method for Patient Specific Determination, *Orthopaedic Research Society Annual Meeting,* Las Vegas, NV.
11. Guess TM, **Stylianou AP**, Razu SS, Jahandar H, (2015), Computational Musculoskeletal Modeling in Movement Analysis, *American Physical Therapy Association Combined Sections Meeting,* Indianapolis, IN.
12. Guess TM, **Stylianou AP**, Jahandar H, (2014), Concurrent Prediction of Knee Contact, Ground Reaction, and Muscle Forces During Gait, *7th World Congress of Biomechanics,* Boston, MA.
13. Kia M, Guess TM, **Stylianou AP**, (2013), Musculoskeletal Model During Treadmill Gait, *American Society of Mechanical Engineers Summer Bioengineering Conference,* Sunriver, OR.
14. **Stylianou AP**, Kia M, Guess TM, (2013), Tibiofemoral Contact Pressure During Gait, *American Society of Mechanical Engineers Summer Bioengineering Conference,* Sunriver, OR.
15. Bloemker K, Kia M, Guess TM, **Stylianou AP**, (2013), Prediction of Knee Loading During a Dual Limb Squat in a Muscle Driven Musculoskeletal Model with Anatomic Knee Joints, *Orthopaedic Research Society Annual Meeting,* San Antonio, TX.
16. Kia M, Guess TM, **Stylianou AP**, (2013), Validation of a Musculoskeletal Model with Prosthetic Knee Through Six Experimental Gait Trials, *Orthopaedic Research Society Annual Meeting,* San Antonio, TX.
17. **Stylianou AP**, Guess TM, Kia M, (2013), Contact Pressure Estimation in a Muscle Driven Model of an Instrumented Prosthetic Knee During Gait, *Orthopaedic Reaserch Society Annual Meeting,* San Antonio, TX.
18. Guess TM, **Stylianou AP,** Kia M, Lu Y, Derakhshani R, Pulasani P, (2013), Concurrent Simulation of Muscle Force and Tissue Stress During Movement: Multiscale Modeling From the Body to the Tissue Levels, *Proceedings of the 11th International Symposium, Computer Methods in Biomechanics and Biomedical Engineering, Salt Lake City, UT,* Presented in the Special Session: Multiscale Biomechanics: Bridging from the Body/Organ Level to the Tissue/Cell/Microstructure Level.
19. Guess TM, **Stylianou AP**, Kia M, (2012), Validation of Knee Load Predictions During a Dual Limb Squat and Calfrise, *American Society of Mechanical Engineers Summer Bioengineering Conference,* Fajardo, Puerto Rico.
20. Kia M, Guess TM, **Stylianou AP**, (2012), Musculoskeletal Model of the Human Knee with Representation of Menisci During the Stance Phase of a Walk Cycle, *American Society of Mechanical Engineers Summer Bioengineering Conference,* Fajardo, Puerto Rico.
21. **Stylianou AP**, Guess TM, Cook JL, (2012), Multibody Modeling of the Canine Cranial Cruciate Ligament Deficient Stifle Joint, *Veterinary Orthopaedic Society Meeting,* Crested Butte, CO.
22. **Stylianou AP**, Guess TM, Olcott LE, Paiva G, Kia M, Cook JL, (2011), A Model of the Canine Stifle Joint with Representation of Medial Meniscus During Squat Motion, *American Society of Mechanical Engineers Summer Bioengineering Conference,* Farmington, PA.
23. McVey MA, **Stylianou AP**, Lyons KE, Pahwa R, Luchies CW, Cheney P, (2009), Comparison of an Automatic and Voluntary Task in Early Parkinson's Disease, *American Society of Biomechanics Annual Meeting,* University Park, PA.
24. **Stylianou AP**, Luchies CW, McVey MA, Lyons KE, Pahwa R, (2009), Postural Sway Changes in Mild to Moderate Parkinson's Disease, *American Society of Biomechanics Annual Meeting,* University Park, PA.
25. McVey MA, **Stylianou AP**, Luchies CW, Haines M, Lyons KE, Pahwa R, (2008), The Effect of Parkinson's Disease to a Backwards Pull: Center of Pressure, *American Society of Biomechanics, North American Congress on Biomechanics (NACOB),* Ann Arbor, MI.
26. McVey MA, **Stylianou AP**, Luchies CW, Lyons KE, Pahwa R, Jernigan SD, Manhken JD, (2008), The Effect of Parkinson's Disease on the Step Response to a Backwards Pull, *American Society of Mechanical Engineers Summer Bioengineering Conference,* Marco Island, FL.
27. McVey MA, **Stylianou AP**, Luchies CW, Lyons KE, Pahwa R, Jernigan SD, (2007), Effect of Parkinson's Disease on Step Response to a Backwards Pull, *American Society of Biomechanics,* Palo Alto, CA.
28. King GW, Luchies CW, **Stylianou AP**, McVey MA, (2007), Age and Fatigue Effects on Lower Extremity Joint Torque Development, *American Society of Biomechanics,* Palo Alto, CA.

29. **Stylianou AP**, McVey MA, Luchies CW, Lyons KE, Pahwa R, (2007), Altered Response to a Backwards Pull in Parkinson's Disease, *American Society of Biomechanics,* Palo Alto, CA.
30. Dancause N, Barbay S, Frost SB, **Stylianou AP**, Nudo RJ, (2007), A New Motor Field in the Lateral Frontal Cortex of Monkeys, *17th Annual Meeting of the Neural Control of Movement Society,* Seville, Spain.
31. **Stylianou AP**, Luchies CW, Maletsky RA, Lyons KE, Pahwa R, Manhken JD, (2006), Postural Sway Analysis in Parkinson's Disease: Visual Feedback, *American Society of Mechanical Engineers Summer Bioengineering Conference,* Amelia Island, FL.
32. King GW, Luchies CW, Maletsky RA, Zahner L, **Stylianou AP**, McVey MA, (2006), Age Effects on Lower Extremity Force Control, *American Society of Mechanical Engineers Summer Bioengineering Conference,* Amelia Island, FL.
33. **Stylianou AP**, Luchies CW, Lerner DE, King GW, (2004), SEMG Analysis of Elbow Flexors During Sustained Maximal Voluntary Contractions, *XVth Congress of the International Society of Electrophysiology and Kinesiology,* Boston, MA.
34. King GW, Luchies CW, **Stylianou AP**, Richards L, (2004), Effects of Lower Extremity Exercise on Balance Recovery from a Forward Fall, *XVth Congress of the International Society of Electrophysiology and Kinesiology,* Boston, MA.
35. **Stylianou AP**, Luchies CW, Insana MF, (2003), EMG Onset Detection Using the Maximum Likelihood Method. *American Society of Mechanical Engineers Summer Bioengineering Conference,* Key Biscayne, FL.
36. King GW, Luchies CW, **Stylianou AP**, Schiffman JM, Thelen DG, (2003), Effects of Step Length on Balance Recovery from a Forward Fall, *American Society of Mechanical Engineers Summer Bioengineering Conference,* Key Biscayne, FL.
37. Luchies CW, **Stylianou AP**, King GW, Won YS, Lerner DE, Richards L, (2003), Effects of Fatigue and Load Carriage on the Soldier's Performance of Time Critical Tasks, *Kansas Statewide EPSCoR Conference,* Lawrence, KS.
38. Kim SH, Pohl PS, Luchies CW, **Stylianou AP**, Won YS, (2002), Ipsilateral Deficits in Sensory Motor Control After Stroke, *American Physical Therapy Association Combined Sections Meeting,* Boston, MA.
39. Luchies CW, Won YS, Schiffman J, **Stylianou AP**, (2000), Age Effects of Postural Control Mechanisms: The Upper Extremities, *The American Aging Association 29th Annual Meeting, American College of Clinical Gerontology 14th Annual Meeting, American Federation for Aging Research 13th Annual Grantee Conference,* Boston, MA.
40. Luchies CW, **Stylianou AP**, Won YS, (1999), Effects of Age on the Utilization of Lower and Upper Extremity Responses for Balance Recovery, *The 14th Symposium of the International Society of Posture and Gait Research,* Waterloo, Ontario, Canada.

INVITED PRESENTATIONS

1. **Stylianou AP**, Guess TM, (2011), Validation of a Subject Specific Canine Stifle Joint Model, *Comparative Orthopaedic Day,* Columbia, MO.
2. **Stylianou AP**, (2011), Multibody Modeling of the Lower Extremities, *Missouri Musculoskeletal Conference,* Kansas City, MO.
3. **Stylianou AP**, (2018), Utilizing Motion Capture and Joint Modeling in Athletic Training, MoATA Annual Educators and Student Leadership Conference, Fayette, MO

FUNDED GRANTS

CO-PI, National Institutes of Health, National Institute of Arthritis and Musculoskeletal and Skin Diseases, Award Number: RARO61698A.
Title: Subject Specific Concurrent Simulation of Movement and Natural Knee Contact Mechanics.
Total Award Amount: $444,150
Time: August 1, 2011 – July 31, 2014

PI, University of Missouri Research Board,
Title: Knee Joint Contact Pressure and Osteoarthritis Risk in Trans-tibial Amputees: A patient-specific approach.
Total Award Amount: $43,537

Time: June 1, 2016 – May 31, 2017

Co-PI, University of Missouri Research Board
Title: Virtual Pelvic Surgery Simulator for the Prevention of Surgical Errors.
Total Award Amount: $47,048
Time: June 1, 2017 – May 31, 2018

SERVICE

- Reviewer Applied Bionics and Biomechanics
- Reviewer Journal of Biomechanics
- Reviewer American Journal of Veterinary Research
- Reviewer International Journal for Numerical Methods in Biomedical Engineering
- Reviewer International Journal of Neuroscience
- Reviewer Pearson Education
- Reviewer Journal of Multibody Systems
- Reviewer Journal of Knee Surgery
- Reviewer American Journal of Sports Medicine
- Reviewer Journal of Biomechanical Engineering

PROFESSIONAL MEMBERSHIPS

American Society of Mechanical Engineers (ASME)
American Society of Biomechanics (ASB)
Orthopaedic Research Society (ORS)