

Dr. Lu is a Biomedical Engineer experienced in the fields of biomedical and biomechanical engineering, specifically applying the principles of injury tolerance and causation in various types of accidents including motor vehicular accidents, pedestrian accidents, slip, trip and falls, industrial accidents such as human machinery interactions, and many others in different settings that involve body kinematics and kinetics and injury mechanisms for various anatomical regions.

### **Licensure and Certification**

- ACTAR Accredited Traffic Accident Reconstructionist, #2925
- Certified XL Tribometrist, English XL Variable Incidence Tribometer

### **Formal Education**

- Doctor of Philosophy in Biomedical Engineering, Wayne State University, 2006
- Master of Science in Biology, University of Michigan, 2000
- Bachelor of Science in Biology, University of Science and Technology of China, 1998

### **Professional Development**

- EDR Summit, Collision Publishing, Houston, TX, 2017
- World Reconstruction Exposition, Orlando, FL, 2016
- EdgeFX – 3D Accident Reconstruction Animation Software, Visual Statement, 2014
- Applying Automotive EDR Data to Traffic Crash Reconstruction, SAE International, 2014
- Florida's New Expert Opinion Evidence Standard, Florida State University College of Law, Tallahassee, FL, 2013
- ARAS 360 3D Computer Diagramming for Crash Reconstruction, ARAS 360 Technologies Inc., Tallahassee, FL, 2011
- Safe Operation of Powered Industrial Truck, BEC Consulting, Tallahassee, FL, 2011
- Accident Reconstruction, Northwestern University Center for Public Safety, Tallahassee, FL, 2008
- Vehicle Crush Documentation – Use and Analysis of Total Station Survey Data, BEC Consulting, Tallahassee, FL, 2008
- Evidence Inspection, Documentation, Analysis and Preservation, BEC Consulting, Tallahassee, FL, 2008
- Photo Modeler – Vehicle Measurements, BEC Consulting, Tallahassee, FL, 2007
- Human Factors, Perception and Reaction, BEC Consulting, Tallahassee, FL, 2007
- Seat Belts in Accident Reconstruction, BEC Consulting, Tallahassee, FL, 2007
- Airbag Blackbox and Blackbox Downloads, BEC Consulting, Tallahassee, FL, 2007
- Tissue Biomechanics, Wayne State University, Detroit, MI, 2003
- Musculoskeletal Biomechanics, Wayne State University, Detroit, MI, 2003
- Biomedical Instrumentation, Wayne State University, Detroit, MI, 2002
- Mathematical Modeling: Bioengineering, Wayne State University, Detroit, MI, 2002
- Impact Biomechanics, Wayne State University, Detroit, MI, 2001
- Pathophysiology: Pain, Wayne State University, Detroit, MI, 2001
- Engineering Physiology, Wayne State University, Detroit, MI, 2000

### **Professional Affiliations**

- Society of Automotive Engineers (SAE)
- Biomedical Engineering Society (BMES)

- American Standards for Testing of Materials (ASTM)
  - E58 - Forensic Engineering
  - F08 - Sports Equipment, Playing Surfaces, and Facilities

### Professional Experience

- Project Manager, Forensic Engineering Technologies, Orlando, FL, 2014– present
- Consulting Engineer, BEC Consulting, LLC., Tallahassee, FL, 2006 – 2014
- Research Assistant, Wayne State University Bioengineering Center, Detroit, MI, 2001 – 2006

### Awards

- John Paul Stapp Award, 50th Stapp Car Crash Conference, 2006
- Best Student Paper Award, 50th Stapp Car Crash Conference, 2006
- Best Student Paper Award, 49th Stapp Car Crash Conference, 2005
- New Investigator Recognition Award, 50th Annual Meeting of the Orthopedic Research Society, 2004
- Ford Biomedical Engineering Graduate Fellowship, Ford Motor Company, 2001 - 2004

### Publications

- "Use of anthropometric data in the biomechanical injury analysis of vehicular collisions" BMES Annual Conference. Lee W and Lu Y, 2015
- "Strain and load thresholds for cervical muscle recruitment in response to quasi-static tensile loading of the caprine C5-C6 facet joint capsule" J Electromyography and Kinesiology (6):e387-94. Azar NR, Kallakuri S, Chen C, Lu Y, Cavanaugh JM, 2009
- "Tensile stretching of cervical facet joint capsule and related axonal changes" Eur Spine J (4):556-63. Kallakuri S, Singh A, Lu Y, Chen C, Patwardhan A, Cavanaugh JM, April 17, 2008
- "Neural response to low and high rate cervical facet joint stretch" World Congress of Neck Pain, Los Angeles, CA, Cavanaugh JM, Chen C, Lu Y, Kallakuri S, January 20-22, 2008
- "Pain generation in lumbar and cervical facet joints" J Bone and Joint Surgery (Am), 88 Suppl 1(pt 2):63-7. Cavanaugh JM, Lu Y, Chen C, Kallakuri S, 2006
- "Distribution of A-delta and C fiber units in cervical facet joint capsule and their response to stretch" J Bone and Joint Surgery (Am) 88(8):1807-16. Chen C, Lu Y, Kallakuri S, Patwardhan A, Cavanaugh JM, 2006
- "Mechanical properties of spinal nerve roots subjected to tension at different strain rates" J Biomechanics 39(9):1669-76. Singh A, Lu Y, Chen C, Cavanaugh JM, 2006
- "A new model of traumatic axonal injury to determine the effects of strain and displacement rates" Stapp Car Crash J 50:601-23. Singh A, Lu Y, Chen C, Cavanaugh JM, 2006 (Best Student Paper Award)
- "Neural response of cervical facet joint capsule to stretch: a study of whiplash pain mechanism" Lu Y, presented at the 49th Stapp Car Crash Conference, Washington, DC, Nov 9-11, 2005
- "Development of an in vivo method to investigate biomechanical and neurophysiological properties of spine facet joint capsules" Eur Spine J 14(6):565-572. Lu Y, Chen C, Kallakuri S, Patwardhan A, Cavanaugh JM, 2005
- "Neurophysiological and biomechanical characterization of goat cervical facet joint capsules" J Ortho Res 23(4):779-787. Lu Y, Chen C, Kallakuri S, Patwardhan A, Cavanaugh JM, 2005
- "Neural response of cervical facet joint capsule to stretch: a study of whiplash pain mechanism" Stapp Car Crash J 49:291-322 (John Paul Stapp Award, Best Student Paper Award). Lu Y, Chen C, Kallakuri S, Patwardhan A, Cavanaugh JM, 2005

## Curriculum Vitae Ying Lu, Ph.D.



- "Neuroresponse of mechanoreceptors to strains in goat cervical facet joint capsule" 51st Annual Meeting of the Orthopaedic Research Society, paper # 277, Washington, DC, Lu Y, Chen C, Kallakuri S, Patwardhan A, Cavanaugh JM, Feb 20-23, 2005
- "Recording of neural activity from goat cervical facet joint capsule using custom-designed miniature electrodes" Spine 30(12):1367-1372. Chen C, Lu Y, Cavanaugh JM, Kallakuri S, Patwardhan A, 2005
- "Neurophysiologic studies of cervical facet joint capsule – experimental setup and characterization of sensory receptors" 50th Annual Meeting of the Orthopaedic Research Society, poster # 331, San Francisco, CA, Chen C, Lu Y, Cavanaugh JM, Kallakuri S, Patwardhan A, Mar 6-11, 2004