

# Omid Komari, Ph.D., MSME.

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## **Summary:**

- An expert engineer with an M.Sc. in Mechanical Engineering and a Ph.D. in Biomechanical Engineering along with a strong multi-disciplinary background in mechanical engineering, safety, material science, biomechanics, human subject research, and data analytics with peer-reviewed publications
- Experienced testifying expert in both trials and depositions and on-site investigations
- Certified Slip, trip & fall expert
- Experienced CAE expert familiar with standard crash tests protocols and regulations
- Deep interest in the prevention and augmentation of human performance and safety through the convergence of technology and data analytics
- Experienced in computational modeling and experimental characterization of tissue biomechanical behaviors and injury biomechanics

## **PROFESSIONAL EXPERIENCE:**

2020 – 2021

**University of California, Irvine**  
Postdoctoral Researcher

- Research and development in the fields of Medical Technology
- Biomaterials
- Computational Modeling
- Fatigue Analysis
- Computer-Aided Engineering (CAE)
- Finite Element Analysis (FEA)
- Data Science
- Experimental Techniques in Medical Device Testing

2018 – 2022

**BioEx Consulting, LLC.**  
Engineer Consultant

- Injury Biomechanics during motor vehicle collisions, pedestrian injuries, slip/trip & fall, etc
- Occupant Kinematics
- Accident Reconstruction
- Involved in research studies using crash tests data compatible with standard tests such as NCAP and IIHS tests
- Developed and published peer-reviewed research studies and data analyses based on real-world crashes using NHTSA sources such as NASS CDS, CIREN, and CISS
- Ergonomics and human factors
- Mechanical failures
- Computational modeling and coding

2018 – 2018

**National Biomechanics Institute, Inc.**  
Managing Scientist

- Injury Biomechanics during motor vehicle collisions, pedestrian injuries, slip/trip & fall, etc
- Occupant Kinematics
- Accident Reconstruction
- Involved in research studies using crash tests data compatible with standard tests such as NCAP and IIHS tests
- Developed and published peer-reviewed research studies by analyzing NASS CDS CIREN, and CISS crash data
- Ergonomics and human factors
- Motion analyses and impact biomechanics testing

2017 – 2018

**Vanderpol & Associates Consulting, Inc.**  
Senior Engineer

- Injury Biomechanics during motor vehicle collisions, pedestrian injuries, slip/trip & fall, etc
- Occupant Kinematics
- Accident Reconstruction
- Vehicle crash tests
- Familiar with FMVSS and ECE rules and regulations
- Post-processing test data using CAE
- Good understanding of the FMVSS and ECE regulations such as FMVSS 208, 202, 214, etc.
- Motion analyses

2015 – 2017

**Pittsburgh Biomechanics, LLC.**  
Senior Scientist

- Injury Biomechanics during motor vehicle collisions, pedestrian injuries, slip/trip & falls, occupational injuries, etc
- Occupant Kinematics
- Accident Reconstruction
- Computational modeling

2010 – 2010

**SmartWatt Energy**  
Project Engineer

Project engineer & head of energy auditing team in electrical and mechanical sections.

## **ACADEMIC POSITIONS:**

June 2015 –  
August 2015

**Reynolds Community College**  
Adjunct Assistant Professor

August 2011 –  
December 2014

**Virginia Commonwealth University**  
Graduate Teaching Assistant

August 2011 –  
December 2014

**Virginia Commonwealth University, Medical Center**  
Graduate Research Assistant

January 2009 –  
January 2011

**California State University, Sacramento**  
Graduate Teaching Assistant

## **COMPUTATIONAL SKILLS:**

**Software:** LabVIEW, CAD, Abaqus, Nastran, Patran, Mathematica, MatLab, 3D SolidWorks, Marc Mentat, ANSYS, Fluent, COMSOL, BiteFX, LS-DYNA, MADYMO, 3D CAD, Interactive Image Segmentation, ImFusion, FARO Scene, Draftsight, OpenSim, Kinovea, Photomodeler, Motion Analysis, BTK (Biomechanical Toolkit), Pro/Engineer, CAD Zone, PC-Crash, Virtual Crash Sigma Plot, Prism, Stat-ese, Hysis, Aspen B-jack, Microsoft Office Suites (Excel, PowerPoint, Word), Microsoft ICE, and experience with FARO Technologies, 3D Scanner, and electromyography (EMG). **Programs:** C++, Python, Fortran, and Linux

## **LICENSES, CERTIFICATIONS, & TRAINING:**

*Crash Data Retrieval Technician I & II Certification, Crash Data Retrieval Analyst Certification, PC-Crash I, II, III, and IV certifications, Certified English Excel Tribometers (CXLT)*, Certifications: Injury Biomechanics and Trauma, Evaluating Injury Causation: Applied Biomechanics and Clinical Science, The Math and Physics Behind Accident Reconstruction Equations, Where Do They Come From, Verification Using Computer Simulations, LaserTech Certification: Drone Mapping: Ground and Aerial Measurements, Video Analysis Techniques, Injury Analysis for Forensics, Point Clouds in Collision Reconstruction

## **ACADEMIC HONORS:**

Outstanding teacher assistant, School of Engineering – Virginia Commonwealth University 2013

- Awarded in recognition of intellectual leadership, academic achievement, values of honesty and integrity, and above-and-beyond engagement as an instructional assistant

Winner of Biomedical Engineering Society Career Development Award, Tampa, Florida, USA 2017

Best Poster Award, 17th Annual Research Symposium and Exhibit, Richmond, VA, USA 2013

## **REFEREE SERVICE:**

Reviewer for Society of Automotive Engineers International Journal

## **ADDITIONAL COURSEWORK:**

**Applied Mechanics-Materials Science:** Advanced Computational Modeling, Solid Mechanics, Thermodynamics, Diffusion and Kinetics, Mechanical Properties of Materials  
**Computer Science:** Machine learning and statistical pattern recognition  
**Mathematics:** Advanced Numerical Analysis, Differential Equation

## **CONTINUING LEGAL EDUCATION:**

May 2018 – CA2RS 2<sup>nd</sup> Quarter Training North and South California Instructor:  
June 2018 Introduction to Pedestrian/Bicycle vs. Auto Collisions

## **PATENT:**

Vehicle Safety Device (Pat. No. 11,155,228)  
Safety Restraint Cervical Region Headrest Airbag Assembly (Provisional)  
Automatic Mechanical Pivotal Front Vehicle Passenger-Seats Assembly (Provisional)

## **PEER-REVIEWED CONFERENCE PRESENTATIONS & JOURNAL PUBLICATIONS:**

- Mapara, A., Taheri-Nassaj, N., Komari, O., Shen, J., Sheets, C., and Earthman, J., Finite Element Study of Periodontal Ligament Characteristics For A Central Incisor and A Mandibular Second Molar Under Percussion Conditions, submitted to the Journal of Medical and Biological Engineering
- Jie Shen, Omid Komari, Aboozar Mapar, Cherilyn Sheets, James Earthman, Dynamic Finite Element Analysis of QPD Crack Detection in Natural Teeth, Biological Materials Science, 2022 TMS Annual Meeting & Exhibition, Anaheim, CA, March 2022
- Komari, O., Javidi, M., Merrill, Z., and Toosi, K., "Side Airbags Deployment Range from Analysis of Event Data Recorder Database of Real-World Incidents," SAE Int. J. Passeng. Cars - Electron. Electr. Syst. 12(2):163-171, 2020

- Zachary Merrill, Omid Komari, Kevin Toosi, Predictive Modeling of Serious Injury Risk in Frontal Crashes, American Society of Biomechanics Annual Meeting August 2020
- Omid Komari, Sliding Distance Measurements and Their Role in Pedestrian vs. Vehicle Accidents, American Academy of Forensic Sciences, Anaheim, California, February 2020.
- Omid Komari, Occupant Load Criterion (OLC) Developed Model, WCX SAE World Congress Experience, Detroit, Michigan, April 2019.
- Hashish R, Komari O, Limousis-Gayda M. Determining Cervical Disc Injury Potential in Motor Vehicle Collisions. American Society of Biomechanics. Rochester, Minnesota. August 2018.
- Omid Komari, Ryan M. Musselman, Adam P. Klausner, John E. Speich, Actin-myosin Interrelated Model for Length Adaptation in Bladder Smooth Muscle, 2019 Cellular and Molecular Bioengineering Conference, San Diego, California, January 2019
- Omid Komari, Rami Hashish, The Bracing Paradox: Should Occupants Brace During Frontal Motor Vehicle Collisions?, 8th World Congress on Biomechanics, Dublin, Ireland, July 2018.
- Omid Komari, Rami Hashish, Pre-Existing Damage Affects Calculated Delta-Vs in Frontal Collisions Accident Reconstruction, American Biomechanics Society, Rochester, Minnesota, August 2018.
- Omid Komari, Rami Hashish, The Effect of Pre-Existing Damage on Delta-V Calculations in Rear-End Vehicle Collision, American Society of Civil Engineers (ASCE) Technical Advancement Congress, Minnesota, September 2017.
- Kevin Toosi, Omid Komari, William Bliss, Upper and Lower Extremity Injuries in Low-Speed Motor Vehicle Accidents, Biomedical Engineering Society (BMES) Annual Meeting, Minneapolis, Minnesota, October 2016.
- Kevin Toosi, Omid Komari, William Bliss, Lower Extremity Injuries in Low-Speed Motor Vehicle Accidents, Biomedical Engineering Society (BMES) Annual Meeting, Tampa, Florida, October 2015.
- Firdaweke G. Habteyes, Omid Komari, R. Wayne Barbee, Adam P. Klausner, Paul H. Ratz and John E. Speich, Modeling the Influence of Acute Changes in Bladder Elasticity on Pressure and Wall Tension During Filling, Journal of Mechanical Modeling of Biomedical Materials, March 2017
- Omid Komari, Headley, P. C., Klausner, A. P., Ratz, P. H., & Speich, J. E. Evidence for a Common Mechanism for Spontaneous Rhythmic Contraction and Myogenic Contraction Induced by Quick Stretch in Detrusor Smooth Muscle. *Physiological reports*, 1(6), 2013.