

3D Bio-Motion Research Lab

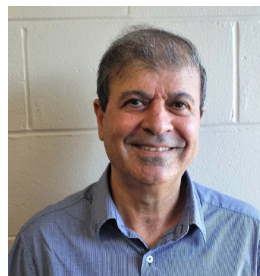


The 3D Bio-Motion Research Lab (3DBMRL) performs basic and applied research in human motion, human factors, and biomechanics. Current research also includes multi-body dynamics and structural health monitoring. The lab aims to improve the safety and comfort of people operating heavy machinery or being transported in emergency vehicles, as well as to determine safe loadings for bridges under flood conditions.

Who We Work With

- ARMR Systems
- Institute for Transportation, Iowa State
- Iowa Department of Transportation
- Mid-America Transportation Center
- US Army Aeromedical Research Laboratory (USAARL)
- U.S. Department of Defense
- University of Iowa Hospitals and Clinics

Lab Director: Salam Rahmatalla



- Professor of Civil and Environmental Engineering, University of Iowa
- Professor of Biomedical Engineering, University of Iowa
- PhD: Civil and Environmental Engineering, University of Iowa

RESEARCH FOCUS & HIGHLIGHTS

Human Motion Capture and Validation

The lab is equipped with state-of-the-art inertial and marker-based motion capture systems to investigate human motion in applications such as walking, running, jumping, and climbing ladders. Researchers perform human motion validation to enhance simulation capabilities in applications such as the human model Santos. They use sophisticated models for biomechanics and animation applications for the whole human body. Visual3D software is used in the 3DBMRL to analyze and share data with collaborators for various testing scenarios.

Whole-Body Vibration

The 3DBMRL hosts a state-of-the-art, six-degree-of-freedom, man-rated Moog FCS shaker table (Army Research Office, DURIP Award, 2007) that can reproduce field ride files from moving machinery and Army and civilian vehicles and helicopters inside the lab. Applications include situations where a supine human is immobilized and tested under vibration ride files that simulate vibration conditions during ground and aerial pre-hospital transport. The shaker table lab is augmented with virtual reality and a real-time engine and is used to investigate human motion and biodynamics in complicated environments, such as the instability and potential falls of people driving ATVs in rural areas, and in the optimal placements of vehicle interior accessories such as brake pedals, shifters, and control buttons.

LEARN MORE



SCHEDULE A VISIT

by contacting Salam Rahmatalla at salam-rahmatalla@uiowa.edu or 319-353-5657



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on our website iti.uiowa.edu/labs/3d-bio-motion-research-lab

