

# CHIA-YUAN (MARK) CHANG



## Specialized Professional Competence

Biomechanics including analysis of human injury mechanism, causation, and tolerance. Computer simulation and analysis of vehicle dynamics and occupant kinematics. Computational modeling and analysis of mechanical systems. Human ergonomic and muscle activation analysis. Static and dynamic experimental test design and analysis. Accident reconstruction.

## Background and Professional Honors

B.S. (Mechanical Engineering), National Chung Cheng University, Taiwan  
M.S. (Mechanical Engineering), National Chung Cheng University, Taiwan  
Ph.D. (Mechanical Engineering), University of Michigan, Ann Arbor

Engineer,  
Talas Engineering, Inc.  
Graduate Student Research Assistant,  
University of Michigan Transportation Research Institute (UMTRI), Ann Arbor

## Memberships

Member, American Society of Biomechanics  
Member, American Society of Mechanical Engineers  
Member, Society of Automotive Engineers

## Awards

Doctoral Studies Program at UMTRI Scholarship from the Office of the Vice President for Research at  
the University of Michigan  
Stapp Student Paper Award, 2008  
University of Michigan College of Engineering Graduate Student Symposium Presentation Award, 2006

## **Selected Publications and Presentations**

Chang, C.Y., Rupp, J.D., Reed, M.P., Hughes, R.E., Schneider, L.W. (2009) Predicting the effects of muscle activation on knee, thigh, and hip injuries in frontal crashes using a finite-element model with muscle forces from subject testing and musculoskeletal modeling. *Stapp Car Crash Journal* 53.

Hu, J., Rupp, J.D., Lamb, T., Chang, C.Y., Schneider, L.W. (2009) Finite element investigation of effects from muscle tension, preimpact posture, seat position, and torso restraint on the risk of knee-thigh-hip injuries in frontal crashes.

Chang, C.Y., Rupp, J.D., Kikuchi, N., Schneider, L.W. (2008) Development of a finite element model to study the effects of muscle forces on knee-thigh-hip injuries in frontal crashes. *Stapp Car Crash Journal* 52: pp. 475-504.

Computational Injury Biomechanics. UMTRI student seminar, July 2008.

Development of a lower-extremity finite element model to study the effects of muscle forces on knee-thigh-hip injuries in frontal crashes. 2006 Injury Biomechanics Symposium, Columbus OH, May 2007.

Liu, D.S., Chang, C.Y., Fan, C.M., Hsu, S.L. (2003) Influence of environmental factors on energy absorption degradation of polystyrene foam in protective helmets. *Engineering Failure Analysis* 10, pp. 581-591.