



CURRICULUM VITAE  
**J. QUINN CAMPBELL**

**EDUCATION**

- 2001      MS      UNIVERSITY OF COLORADO – BOULDER, COLORADO  
Mechanical Engineering
- 1999      BA      THE COLORADO COLLEGE – COLORADO SPRINGS, COLORADO  
Physics

**PROFESSIONAL EXPERIENCE**

- 2009 – DATE    VECTOR SCIENTIFIC, INC.  
*Biomechanical Engineer*  
Impact injury biomechanics research and forensic consulting in automotive collisions and sport/recreation accidents.
- 2008            AASA, INC.  
*Research Engineer*
- Support NHTSA on finite element brain model development and analysis.
  - Research and write proposals for new contracts and grants.
  - US Army SBIR Contract:
    - Research literature and crash databases (NASS, CIREN, FARS) to determine primary rollover crash modes and injury mechanisms.
    - Develop a proposal for a new set of vehicle tests to predict injury in rollover accidents for both military and civilian use.
- 2006 – 2008    IT SHOWS, INC.  
*Research Engineer*
- Off-site contractor supporting NHTSA Biomechanics Group research:
    - Develop, validate, and use finite element and multi-body models.
    - Brain, Thorax, and THOR Dummy
  - Research and write proposals for new contracts and grants.
  - US Air Force Contract:
    - Develop risk calculator by analyzing statistical crash databases to find frontal crash and rollover probabilities as well as injury risks.

- 2003 – 2006 AASA, INC.  
*Research Engineer*
- Off-site contractor supporting NHTSA Biomechanics Group:
    - Develop, validate, and use finite element and multi-body models.
    - Brain, Thorax, Lower Extremity, and THOR Dummy
  - Develop injury risk curves and propose new injury criteria.
  - Adapt a THOR Dummy model for US-Army blast research.
- 2002 – 2003 GESAC, INC.  
*Lead Engineer*
- On-site contractor supporting NHTSA Biomechanics Group.
  - Validate and use finite element models to study injury mechanisms.
    - Brain and Neck models.
- 2001 – 2002 CONRAD TECHNOLOGIES, INC.  
*Research Engineer*
- On-site contractor supporting NHTSA Biomechanics Group.
  - Performed data analysis on cadaver sled tests and crash test dummy tests (CRABI, HIII-6yo, HIII, ES-2, THOR)
  - Run finite element and multi-body simulations.

## **PUBLICATIONS**

Takhounts EG, Ridella SA, Hasija V, Tannous RE, Campbell JQ, Malone D, Danelson K, Stitzel J, Rowson S, Duma S. Investigation of Traumatic Brain Injuries Using the Next Generation of Simulated Injury Monitor (SIMon) Finite Element Head Model, *Stapp Car Crash Journal*, 52:1-51, November 2008.

Malone D, Campbell JQ, Tannous RE. 1st Generation LS-Dyna Model of THOR for AT Mine Resistant Seating, *Proceedings of the 17th Annual Ground Vehicle Survivability Symposium*, March 2006.

Campbell JQ, Tannous RE, Nguyen T, Takhounts EG, Martin P, Eppinger RH. An Approach Towards Developing A Theoretically Based, Statistically Justified, Thoracic Injury Criterion, *Proceedings of the 19th International Technical Conference on the Enhanced Safety of Vehicles*, June 2005.

Campbell JQ, Varellis J, Tannous RE, Haffner M, Takhounts EG, Eppinger RH. Development and Validation of a Finite Element Model of the THOR Lower Extremity, *Proceedings of the Society of Automotive Engineers World Congress*, Detroit, MI, *SAE Technical Paper No. 2005-01-1295*, Warrendale, PA, 2005.

Tannous RE and Campbell JQ. On the Future Use of Finite Element Models in Automotive Regulations, *Proceedings of the Society of Automotive Engineers World Congress*, Detroit, MI, *SAE Technical Paper Series 2004-01-5408*, Warrendale, PA, 2004.

Takhounts EG, Tannous RE, Campbell JQ, Power ED, Shook LS, Eppinger RH. On the Development of the SIMon Finite Element Head Model, *47th Stapp Car Crash Journal*, 47:107-133, November 2003.

Tannous RE, Campbell JQ, Takhounts EG, Eppinger RH. A 2-D Finite Element Model Representing the Human Thorax, *Proceedings of INJURY BIOMECHANICS RESEARCH: Thirty-First International Workshop*, 145-153, November 2003.

Takhounts EG, Eppinger RH, Tannous RE, Campbell JQ, Power ED, Shook LS, Hasija V. Analysis of 3D Rigid Body Motion Using the Nine Accelerometer Array System, *Proceedings of the INJURY BIOMECHANICS RESEARCH: Thirty-First International Workshop*, 59-75, November 2003.

Campbell JQ, Takhounts EG, Power E, Tannous RE, Eppinger RH. Correlation of the SIMon Head Finite Element Model to Relative Motion of the Brain and Skull, *International Congress on Sports Dynamics*, Melbourne, Australia, September 2003.

Campbell JQ, Tannous RE, Takhounts EG. A Method For Using Experimental Data To Drive A 3-D Finite Element Model Of The Lower Extremity, *Proceedings of the 13th Congress on Ski Trauma and Ski Safety*, B2-3, April 2003.

Campbell JQ. Design and Development of a Skate That Simulates Carved Alpine Ski Turns Off-Snow, *Proceedings of the 4th International Sports Engineering Conference*, 616-623, September 2002.

### **TECHNICAL REPORTS**

Campbell JQ, Tannous RE, Eppinger RH. Determination of Human Injury Mechanism, Mechanical Response and Tolerance for Improved Virtual and Physical Biomechanical Test Devices for Vehicle Crashworthiness Applications in Rollover Crash Scenarios. ARMY SBIR Final Report, June 2008.

Varellis J, Campbell JQ, Tannous RE. Development and Validation of a Finite Element Model of the THOR Lower Extremity, Department of Transportation Report, November 2004.

### **PRESENTATIONS**

Campbell JQ, Takhounts EG, Tannous RE, Hasija V, Eppinger R, Ridella S. The Next Generation of the SIMon Head Finite Element Model, SAE – Government/Industry Meeting, Washington, DC, May 2007.

Campbell JQ, Tannous RE, Nguyen T, Takhounts EG, Martin P, Eppinger RH. An Approach Towards Developing A Theoretically Based, Statistically Justified, Thoracic Injury Criterion, 19th International Technical Conference on the Enhanced Safety of Vehicles, Washington DC, June 2005.

Tannous RE, Campbell JQ, Takhounts EG, Eppinger RH. A 2-D Finite Element Model Representing the Human Thorax, INJURY BIOMECHANICS RESEARCH: Thirty-First International Workshop, San Diego, CA, November 2003.

Campbell JQ, Takhounts EG, Power E, Tannous RE, Eppinger RH. "Correlation of the SIMon Head Finite Element Model to Relative Motion of the Brain and Skull, International Congress on Sports Dynamics, Melbourne, Australia, September 2003.

Campbell JQ, A Method For Using Experimental Data To Drive A 3-D Finite Element Model Of The Lower Extremity, ASTM F27 Skiing Safety Semi-Annual Meeting, Burlington, VT, July 2003.

Campbell JQ, Tannous RE, and Takhounts EG. A Method For Using Experimental Data To Drive A 3-D Finite Element Model Of The Lower Extremity, 13th Congress on Ski Trauma and Ski Safety, St. Moritz, Switzerland, April 2003.

Takhounts EG, Campbell JQ, Tannous RE, Power E, Massiello P, Eppinger RH. SIMon (Simulated Injury Monitor), A Next Generation Human Injury Assessment Tool. UAB Traumatic Brain Injury Program Meeting, Washington, DC, February 2003.

Campbell JQ. Design and Development of a Skate That Simulates Carved Alpine Ski Turns Off-Snow, 4th International Sports Engineering Conference, Kyoto, Japan, September 2002.

Eppinger RH, Tannous RE, Power ED, Campbell JQ, Takhounts EG. SIMon Finite Element Head Model. CIREN Meeting, Washington, DC, April 2002.

Campbell JQ and Maltese M. Predicting Rib Fractures Using Digital Convolution, International Harmonization Research Agenda, Biomechanics Working Group Meeting, San Antonio, Texas, November 2001.

#### **CONFERENCES, SEMINARS AND SHORT COURSES**

- 2010 ASTM F27 Skiing Safety Meeting, Denver, CO
- 2009 Stapp Car Crash Conference, Savannah, GA
- 2006 ASTM F27 Skiing Safety Meeting, Squaw Valley, CA.
- 2005 19th Enhanced Safety of Vehicles Conference, Washington, DC.
- 2005 ASTM F27 Skiing Safety Meeting, Snowbird, UT.
- 2004 ASTM F27 Skiing Safety Meeting, Burlington, VT.
- 2004 ASTM F27 Skiing Safety Meeting, Vail, CO.
- 2003 47th Stapp Car Crash Conference, San Diego, CA.

- 2003 31st Annual International Workshop on Human Subjects for Biomechanical Research, San Diego, CA.
- 2003 International Congress on Sports Dynamics, Melbourne, Australia.
- 2003 ASTM F27 Skiing Safety Meeting, Burlington, VT.
- 2003 13th Congress on Ski Trauma and Ski Safety, St. Moritz, Switzerland.
- 2002 46th Stapp Car Crash Conference, Ponte Vedra Beach, FL.
- 2002 30th Annual International Workshop on Human Subjects for Biomechanical Research, Ponte Vedra Beach, FL.
- 2002 4th International Sports Engineering Conference, Kyoto, Japan.
- 2001 45th Stapp Car Crash Conference, San Antonio, TX.
- 2001 29th Annual International Workshop on Human Subjects for Biomechanical Research, San Antonio, TX.
- 2001 Materials and Science in Sports Symposium, San Diego, CA.

#### **AWARDS AND HONORS**

- 2002 Young Investigator Award, 4th International Sports Engineering Conference, Kyoto, Japan.

#### **PROFESSIONAL MEMBERSHIPS AND ACTIVITIES**

- Invited Reviewer Occupant Protection Committee, SAE World Congress 2010
- Member American Society of Testing and Materials 2003 – Present
- Member ASTM – F27 Snow Skiing
- Member ASTM – F08 Sports Equipment and Facilities
- Chairman Ski Session, 4th International Sports Engineering Conference, 2002.
- Member International Sports Engineering Association 2000 – 2005
- Member International Society for Skiing Safety 2002 – 2005
- Participant American Society of Mechanical Engineers, Mentoring Program 2000 – 2005
- Member Professional Ski Instructors of America, Certified Level II 1996 – Present