B. JOHAN IVARSSON

(602) 354-3626 15208 North 50th Place, Scottsdale, AZ 85254 bjivarsson@gmail.com

QUALIFICATIONS SUMMARY

Managing Engineer with fifteen years of continuous experience in research and consulting environments. Planned, designed, and conducted research by applying principles of theoretical and applied mechanics to develop models for human impact response and injury tolerance. Conducted epidemiological studies on road traffic trauma. Analyzed real world accidents by applying knowledge of physics, occupant kinematics, injury tolerance, and injury mechanisms. Professional qualifications include:

- Testing and characterization of cadaveric human tissues and non-biological materials
- Project management
- Biomechanical analysis of real world accidents
- Strong background in statistical analysis of experimental and epidemiological data
- Development of test methodologies and design of experimental set-ups for mechanical testing
- Excellent oral communications skills with a background including presentations of research in the US, Europe, and Japan
- Highly experienced writer of academic research papers and technical reports
- Analysis and interpretation of experimental data
- Thorough knowledge of the biomechanics and road safety literature
- Strong analytical skills in mathematics, dynamics, and statics
- Human anatomy and physiology

EDUCATION

Ph.D., *Biomechanical Engineering*, Chalmers University of Technology, Gothenburg, Sweden, Feb 2002, Dissertation – *Physical Modeling of Brain and Head Kinematics*

Master of Science (MS), *Mechanical Engineering*, Chalmers University of Technology, Gothenburg, Sweden, 1996, Master Thesis – *Finite Element Modeling of a Railway Turnout*

PROFESSIONAL EXPERIENCE

Manager, Exponent Failure Analysis Associates, Phoenix, AZ, Mar 2011 – Present.

- Conducted biomechanical analyses of injuries sustained in real world accidents.
- Conducted failure analyses of mechanical components.
- Managed biomechanical consulting projects.
- Authored extensive white paper proposal to the Government for a major research project.
- Provided guidance and aided junior staff in their analyses.
- Provided mechanical and statistical expert guidance to co-workers.

Senior Engineer, Exponent Failure Analysis Associates, Phoenix, AZ, Aug 2007 – Mar 2011.

- Conducted biomechanical analysis of injuries sustained in real world accidents.
- Managed consulting projects. Responsible for proposal, budget, and timely completion.
- Conducted analysis of more than 75 cases and authored more than 50 technical reports.

- As a team, developed concept solutions for preventing impact damage to military equipment.
- Per the request of an external client, co-developed a model for evaluating the risk of traumatic injury to workers along an assembly line for manufacturing of electronic components.
- As a team, planned and carried out testing for the investigation of the influence of shoulder pad stiffness on head injury risk in ice hockey.
- Authored and co-authored research papers and book chapters.
- Attended the PC-Crash Training Workshop

Research Scientist, University of Virginia Center for Applied Biomechanics, Charlottesville, VA, Sept 2004 – Jul 2007.

- Served as co-project investigator and project manager on research projects for external clients.
- Managed and guided students in the laboratory testing environment.
- As a team, designed an experimental set-up for studying the response and injury tolerance of the human extremities to combined dynamic axial compression and bending. The set-up was subsequently used in combined loading testing of human cadaveric structures.
- Successfully completed a thorough literature review of the mechanical characteristics of the maturing human spine and provided the external client with estimated age dependent tissue properties and injury criteria for future use in finite element models.
- Responsible for the development of a test methodology and validation criteria for evaluating the biofidelity of an ATD (anthropometric test device) pelvis.
- As a team, evaluated the biofidelity of various designs of ATD thigh, knee, and lower legs.
- Responsible for a project with the aim of characterizing the change in the ligamentous and bone tissue mechanical properties during maturation.
- Completed several field data studies of the frequency and severity of injury in traffic crashes.
- Guided graduate students in various research projects.

Research Associate, University of Virginia Center for Applied Biomechanics, Charlottesville, VA, Apr 2002 – Sept 2004.

- Testing of human cadaveric extremities for characterizing response and injury tolerance in the pedestrian crash loading environment. From the results, dynamic response corridors and tolerance criteria were developed that subsequently have been utilized as validation tools in the development of ATDs for crash safety testing.
- As a team, developed a test methodology and conducted testing with human cadaveric cervical spines for the evaluation of cervical corpectomy constructs in axial and torsional loading.
- As a team, developed test methodologies and conducted testing for characterization of the dynamic tissue properties of the human knee ligaments.
- Per the request of an external client, completed an extensive review of the literature on structural and material properties of tissues and anatomical structures in the pediatric human and utilized the data to develop pediatric injury criteria. Selected materials from the reports are to appear in a book on pediatric biomechanics for which I was invited to write a chapter.

Mechanical Designer, Olofstrom Automation Ltd., Mississauga, Ontario, Canada, Summer Internship, Jun 1994 – Jul 1994.

- Assisted in the design of mechanical components for automotive industry assembly lines.

Substitute Teacher, AMU-Gruppen, Gothenburg, Sweden, Apr 1992 – Aug 1992.

- Taught mathematics.

Military Training, Swedish Army, Solleftea, Sweden, Jun 1991 – Apr 1992.
- Served as group leader in an emergency response division part of a field hospital platoon.

PROFESSIONAL ACTIVITIES

- Co-Organizer of the Pedestrian Safety session at the annual Society of Automotive Engineers (SAE) World Congress.
- Organized the Extremity and Pedestrian Injury Biomechanics session at the 5th World Congress of Biomechanics.
- Participated in the Crash Injury Research and Engineering Network (CIREN) activities.
- Scientific Reviewer of manuscripts for:
  - Journal of Biomechanics
  - Journal of Neurotrauma
  - Biomechanics and Modeling in Mechanobiology
  - Society of Automotive Engineers (SAE) World Congress
  - Association for the Advancement of Automotive Medicine (AAAM)
  - IUTAM Symposium
  - Traffic Injury Prevention

LANGUAGES

- English (fluent written and oral)
- Swedish (mother tongue, fluent written and oral)
- German (working knowledge)

CITIZENSHIP

- Dual citizenship (United States and Sweden)

PUBLICATIONS

- See separate list of 50+ published book chapters, journal articles, and conference papers