



PRACTICE AREAS

Collision Reconstruction

- Human Factors:
 - Perception Reaction Time
 - Nighttime Visibility
 - Road Design Assessment & Signage
 - Biomechanics
- Crash Data Recorder Analysis
- Pedestrian & Cyclist Collisions
- Video Analysis
- Rollover Collisions
- Winter Maintenance Assessment
- Tractor Trailer Collisions
- Snowmobile Collisions

Personal Injury Claims

- Human Factors:
 - Slips, Trips & Falls
 - Staircase & Building Code Assessment
 - Coefficient of Friction Testing
 - Signage & Warnings
 - Biomechanics
- Waterparks, Pools & Waterslides
- Zip Lines & Challenge Courses
- Certified Playground Inspector
- Inflatable Play Structures
- Video Analysis
- Trampoline & Gymnastics Incidents
- Wheelchair & Segway Falls
- Ladder Accidents

Product Failure Investigations

- Failure Analysis & Product Testing
- Human Factors:
 - Product Warnings & Labels
 - Anthropometrics

ACADEMIC BACKGROUND

Masters Degree in Biomedical Engineering, University of Toronto, 1998

- Courses in Human Factors, Dynamics, Physiology, Mechanics of Materials

Bachelors Degree in Mechanical Engineering, University of Western Ontario, 1996

- Courses in Physics, Dynamics, Mechanical Design, Biomechanics, Materials, Electric Circuits, Mechatronics, Hemodynamics

EMPLOYMENT HISTORY

Advantage Forensics Inc., Toronto

President, April 2012 to present

Lead investigator on 1200+ collision reconstruction, personal injury & product failure cases

Giffin Koerth Inc., Toronto

Forensic Engineer, Head of Personal Injury Assessment Team, July 2002 to April 2012

Lead investigator on 1200+ collision reconstruction, personal injury & product failure cases

Algood Casters Ltd., Toronto

Mechanical Engineer, January 1999 to June 2002

Conducted failure analysis & destructive testing, developed standards, designed injection molding & stamping dies

Centre for Studies in Aging, Toronto

Researcher, September 1996 to October 1998

Contributed to collision dynamics studies, wheelchair design, human factors studies & balance studies

Hand & Upper Limb Clinic, St. Joseph's Health Centre, London

Student Researcher, September 1995 to April 1996

Developed prototype strength tester, contributed to biomechanics studies

COURT QUALIFICATION

- Qualified by Superior Court of Ontario, Quebec, P.E.I. & California (19 occasions) as expert in:
 - Collision Reconstruction
 - Human Factors including Reaction Time, Collision Avoidance & Signage
 - Road Design Assessment & Winter Maintenance Assessment
 - Biomechanics
 - Slips, Trips & Falls
 - Waterslide Assessment
 - Mechanical Engineering
- Qualified by Ontario Court of Justice & Ontario arbitrations (5 occasions) as expert in:
 - Biomechanics
 - Human Factors
 - Bicycle Collisions
 - Slips, Trips & Falls
 - Mechanical Engineering

PROFESSIONAL SOCIETIES & ASSOCIATIONS

Professional Engineers Ontario, since 2002

Association of Professional Engineers & Geoscientists of Alberta, since 2021

Human Factors & Ergonomics Society (HFES), since 2003, Forensics Program Co-Chair 2016 to 2018

Canadian Association for Technical Accident Investigators & Reconstructionists (CATAIR), since 2002

Canadian Association of Road Safety Professionals (CARSP), since 2009

Canadian Playground Practitioners, 2017 to 2021

Zip Line & Challenge Course Level 2 Certified Inspector, 2013 to 2021

York University Dept. of Mechanical Engineering Curriculum Advisory Committee, since 2019

National Floor Safety Institute B101.4 barefoot slip resistance committee technical lead, 2013 to 2020

American Society for Testing & Materials (ASTM) voting member, since 2002:

- Committee C21: Ceramic Tile Testing
- Committee E17: Vehicle - Pavement Systems
Tire Friction & Pavement Friction
- Committee E30 & E58: Forensic Science & Engineering
Forensic Practice, Product Defects, Vehicular Incidents
- Committee E54: Homeland Security
Security Equipment & Personal Protective Equipment
- Committee F06: Resilient Floor Testing
Test Methods & Slip Resistance
- Committee F08: Sports Equipment & Facilities
Biomechanics
Bicycle Design
Fitness Equipment, Gymnastics, Trampolines, Wrestling Mats
Sports Facility Design
Playground Surfacing
- Committee F13: Pedestrian Safety & Footwear
Traction, Footwear & Walkway Surfaces
- Committee F15: Consumer Products
Pools, Bathtubs, Showers & Bath Seats
Playground Equipment
Highchairs, Gates, Cribs, Change Tables, Bunk Beds, Bouncers & Swings
Stroller & Toy Design
Scooters & Skateboards
Window Fall Prevention
Stun Guns
- Committee F24: Amusement Rides & Devices
Design, Manufacture, Maintenance, Inspection & Operations
Water Rides, Special Rides & Adventure Attractions
- Committee F27: Snow & Water Sports
Skis, Snowboards & Bindings
Water Sports Equipment

ADDITIONAL COURSES & TRAINING

- Collision Reconstruction Training:
 - "Introduction to BERLA-iVE Vehicle Forensics" Seminar, Advantage Forensics, Toronto, Dec 2021
 - "Electrical Diagnostic Testing of Vehicles" Seminar, Advantage Forensics, Toronto, Jan 2021
 - "Correlation of Spedometer Readings with EDR Data" Seminar, Advantage Forensics, Toronto, Sept 2020
 - "Ontario Pedestrian Crash Causation Study", Ministry of Transportation Webinar, July 2020
 - "Vehicle Control History Data" Seminar, Advantage Forensics, Toronto, July 2020
 - "Motorcycle Collision Reconstruction" Seminar, Advantage Forensics, Toronto, July 2020
 - "Collision Reconstruction Journal Review Seminar Series", Advantage Forensics, June to July 2020
 - "Detailed Vehicle Profile Crush Measurements", Laser Tech Webinar, July 2020
 - "Driver Checking Failures Towards Pedestrians & Cyclists: An On-road Study", CARSP Webinar, June 2020
 - "PC-Crash Expert Course: Staged Collisions", MEA, Apr 2020
 - "PC-Crash 12.0: Latest Features", Advantage Forensics, Toronto, Apr 2020
 - "Lessons Learned from Using Driving Simulators to Improve Driver Behaviour", CARSP Webinar, Mar 2020
 - "Preventing Collisions with Wildlife", CARSP Webinar, April 2019
 - "Tire Forensics & Accident Reconstruction", CATAIR, Toronto Police College, June 2017
 - "WREX 2016 Collision Reconstruction Conference", WREX, Orlando, May 2016
 - "Collision Reconstruction Journal Review Seminar Series", Advantage Forensics, Jan to Mar 2016
 - "Extracting Commercial Vehicle EDR Black Box Recorders", Origin & Cause Webinar, Feb 2016
 - "PC-Crash Essentials Course: Latest Features", MEA, Nov 2015
 - "PC-Crash Essentials Course: Vehicle Controls", MEA, Nov 2015
 - "PC-Crash Expert Course: Rollovers", MEA, Sept 2013
 - "PC-Crash Expert Course: Tractors & Trailers", MEA, Apr 2013
 - "Examining Hybrid Electric Vehicles", Advantage Forensics, Toronto, Dec 2012
 - "Commercial Vehicle Event Data Recorder Downloading", Giffin Koerth, Toronto, Jan 2012
 - "Crash Data Retrieval System Technician Certification", CATAIR, Toronto, Mar 2010
 - "PC-Crash 8.1 Advanced Workshop Course", MEA, Toronto, Mar 2009
 - "Advanced Driver Training Course", BMW, Toronto, Sept 2005
 - "Collision Reconstruction, Technology & Application", CATAIR, Burlington, Aug 2003
- Road Design/Maintenance Training:
 - "Traffic Safety Analysis", Advantage Forensics, Toronto, Feb 2022
 - "Roadway Lighting Design", Illumination Engineering Society Webinar, Aug 2020
 - "An Innovative Approach to Assess Risk at Curved-Tangential Intersections", CARSP Webinar, June 2020
 - "Measuring Road Safety Improvements Using Video Based Conflict Analysis", CARSP Webinar, June 2020
 - "Traffic Trends & Safety in a COVID-19 World", Transportation Research Board Webinar, June 2020
 - "Identifying Road Design Issues" Seminar, Advantage Forensics, Toronto, May 2020
 - CARSP Road Safety Conferences, CARSP, June 2018 & June 2009
 - "Childhood Road Traffic Injuries in Canada", CARSP Webinar, Jan 2018
 - "Geometric Design Guide for Canadian Roads", Transportation Association of Canada Webinar, May 2017
 - "Vision Zero Road Safety" CARSP Webinar, Feb 2017
 - "Minimum Maintenance Standards – 2013 Revisions", Ontario Good Roads Association Webinar, March 2013
 - "Designing & Signalizing Turn Lanes for Safety", Institute of Transportation Engineers Webinar, Nov 2008
 - "Practical Urban Road Maintenance Course", C.S. Anderson Road School, May 2008
- Human Factors & Biomechanics Training:
 - HFES Annual Conferences 2021, 2018, 2017, 2016, 2013, 2011, 2009

- ASTM F13 Pedestrian Safety & Footwear Standards Committee Meetings, 2014 to 2021
- "Scientific Foundations of Bloodstain Pattern Analysis", IABPA Webinar, July 2021
- International Ergonomics Association Slip, Trip & Fall Technical Committee Meeting, June 2021
- "Metatarsal Fracture Characterization", University of Waterloo Webinar, June 2021
- "Bloodstain Pattern Analysis Essentials", US Dept. of Justice Webinar, June 2021
- "Alcohol & Drug Impaired Driving Conference", CARSP Webinar, Sept 2020
- "Correlation of Injury Patterns in Pedestrian Fatalities with Collision Dynamics", CARSP Webinar, July 2020
- "Applying Human Factors Principles to Rural Intersection Safety", CARSP Webinar, June 2020
- "Looming Detection Thresholds for Collisions", Advantage Forensics Seminar, Toronto, June 2020
- ASTM C21 Ceramic Tile Standards Committee Meetings, May 2020
- "Forensic Case Studies in Human Factors", Advantage Forensics Seminar, Toronto, Apr 2020
- Slips, Trips & Falls International Conferences, Madrid, Feb 2020 & Toronto, June 2017
- "Truck Drivers' Perceptions of Unsafe Driving Behaviours", University of Victoria Webinar, Feb 2020
- "Driver Distraction: Recent Data & Research", CARSP Webinar, Dec 2019
- "Truck Driver Vibration Exposure, Fatigue & Health", CRE-MSD, University of Waterloo Webinar, Feb 2019
- "Military Footwear Standards" U.S. Department of Defence Webinar, Jan 2018
- "RCMP Cannabis Impairment Evaluation", CARSP Webinar, Sept 2017
- ASTM F08.51 Biomechanics Standards Committee Meetings, May 2017 & May 2014
- "Biomechanics & Insurance Claims", OIAA Conference, Toronto, Feb 2014
- "Barefoot Friction, Slip-Resistance & Footwear", Biomechanical Tribology Research Consortium, Nov 2013
- "Driver Distraction", SAE Webinar, July 2011
- "Human Factors Experts in Forensic Investigation & Litigation", HFES Webinar, June 2011
- "Sports Injury Concussions & Resort Liability Series", McCague Borlack, Toronto, 2010, 2012, 2013, 2019
- "Slip & Fall Prevention Research & Discussion", Tile Council of America Webinar, July 2008
- "Slip Resistance & Safety of Walking/Working Surfaces", ASSE Webinar, June 2006
- "Estimating Driver Perception & Response Times", CATAIR, Oshawa, Dec 2002
- Forensic Video Analysis Training:
 - ASTM E30.12 Digital & Multimedia Evidence Standards Committee Meeting, Oct 2021
 - "Reverse Projection – Integrating Video with 3D Point Clouds" Webinar, iINPUT ACE, Oct 2021
 - "Video Interrogation – Codecs, Containers & Raw Video" Webinar, iINPUT ACE, Sept 2021
 - "Emerging Trends in Video Evidence" Webinar, iINPUT ACE, July 2021
 - "Video Analysis: Aspect Ratio, Resizing & Interpolation" Webinar, iINPUT ACE, June 2021
 - "Forensic Video Analysis: Video Literacy" Course, iINPUT ACE, June 2021
 - "Photogrammetry & Video Analysis" Seminar, Advantage Forensics, Toronto, Feb 2021
 - "Video Evidence Analysis: Equipping Investigators with Modern Tools", iINPUT ACE Webinar, Feb 2020
 - "iINPUT ACE Forensic Video Analysis" Seminar, Advantage Forensics, Toronto, Jan 2020
- Product Safety & Event Safety Training:
 - "Three Steps to Preventing Machine Injuries", Underwriters Laboratory Webinary, March 2021
 - "Security Skills Training & Tactical Threat Assessment" Workshop, M.I.P. Security, Toronto, Feb 2021
 - "Failure Analysis in Product & Mechanical Systems" Seminar, Advantage Forensics, Toronto, June 2020
 - CPR Certification & AED Training Course, Toronto, Mar 2020
 - "Stop the Bleed" Trauma Treatment Course, Toronto, Mar 2020
 - Aerial Lift & Platform Certification, Nov 2018
 - ASTM F08 Sports Equipment, Facilities & Trampoline Standards Committee Meetings, May 2017 & May 2014
 - ASTM F15.22 Toy Safety Standards Committee Meetings, 2012 to 2016
 - "Safer Infant Sleep Products", Australian Safe Communities Foundation Webinar, Sept 2012

- "Introductory Segway Training", San Antonio, Oct 2009
- Playground, Zip Line, Challenge Course & Amusement Ride Training:
 - ASTM F15.09 Home Playground Equipment Standards Committee Meetings, 2021
 - ASTM F15.29 Playground Standards Committee Meetings, 2014 to 2021
 - "Zip Line & Challenge Course Inspector Training Conference & Certification", ACCT, Harrisburg, Mar 2017
 - "Pennsylvania Amusement Ride Safety Conference", Harrisburg, Mar 2017
 - "Canadian Certified Playground Inspector Course", CPSI, Edmonton, Feb 2017
 - "Zip Line & Challenge Course Inspector Training Conference & Certification", ACCT, Baltimore, Aug 2013

LECTURES & TEACHING ENGAGEMENTS

- TV/Radio/Media Guest Expert:
 - "Columbia Icefield Crash: Seatbelts Could Have Saved Lives", Global Evening News Edmonton, July 2020
 - "Crews Working to Remove Tour Bus in Fatal Jasper Rollover", Global News Hour Edmonton, July 2020
 - "Jasper Bus Crash Investigation Likely to Have 3 Focuses: Mechanical Engineer", Global News, July 2020
 - "Stratford Area Collision Claims Two Lives", CBC Radio London & CBC Radio Kitchener-Waterloo, Aug 2018
 - "Hwy 401 Prescott Bus Collision – Highway Design", CBC Radio Ottawa, June 2018
 - "Investigating the Humboldt Collision", CBC Radio, CBC News, CTV News, National Post, TSN, Apr 2018
 - "Humboldt Crash: How to Design a Safe Highway Intersection", Macleans Canada, Apr 2018
 - "Pedestrian Collisions Increasing", Global Evening News, Oct 2015
 - "Nighttime Pedestrian Collisions", CBC Metro Morning, Oct 2015
- Conference Invited Speaker:
 - Program Developer: "Examining & Cross-Examining Experts", The Advocates Society, Toronto, 2010 to 2022
 - "Nighttime Photography & Videography", HFES Human Factors Conference, Austin, Oct 2017
 - "Cross-Border Testifying", HFES Human Factors Conference, Austin, Oct 2017
 - "Barefoot Friction Testing & Research", Slips, Trips & Falls International Conference, Toronto, June 2017
 - "Collision Biomechanics & Injury Assessment", WREX Conference, Orlando, May 2016
 - "Inspecting Vehicle Interiors for Injury Assessments", WREX Conference, Orlando, May 2016
 - "Emerging Sources of Electronic Evidence", Ontario Bar Association Conference, Toronto, June 2014
 - "Black Boxes: 2013 & Beyond", CIAA Ontario AGM Conference, Grand Bend, June 2013
 - "Advanced Analysis of Slip, Trip & Fall Claims", CIAA Ontario AGM Conference, Grand Bend, June 2013
 - "Human Factors in Pedestrian & Cyclist Collisions", Aviva Regional Conference, Niagara Falls, Oct 2009
 - "Property Claims & Risk Management", Ontario Bar Association Conference, Toronto, Jan 2006
- Teaching Appointments:
 - Grade 12 Calculus & Vectors - University stream, Daniel T. Gordon High School, since 2020
 - Biomechanics, University of Toronto MSE431 guest lecturer, 2017
 - Forensic Biomechanics, University of Toronto MIE439 guest lecturer, 2017, 2022
 - Human Factors Case Studies, University of Toronto MIE345 guest lecturer, 2013 to 2018, 2022
 - Biomechanics & Musculoskeletal Disorders, University of Toronto MIE240 guest lecturer, 2013 to 2018
- Professional Course Instructor:
 - "Collision Biomechanics", CATAIR, 2018; CATAIR Atlantic, 2016
 - "Collision Reconstruction: Crush Energy Analysis", CATAIR Atlantic, 2016
 - "Rollover Collision Reconstruction", CATAIR Atlantic, June 2016
 - "Intersection Safety", Ontario Traffic Council, Markham, Nov 2011 & Nov 2010
 - "Practical Urban Road Maintenance", C.S. Anderson Road School, May 2010 & May 2009
 - "Investigating Accident Reconstruction & Personal Injuries", The Canadian Institute, Toronto, Feb 2007

- Seminar presenter:
 - “Advanced Collision Avoidance Analysis”, Advantage Forensics Workshop, Apr 2020 & Nov 2021
 - “Handling Cross-Examination Under Pressure”, Expert Eye Consulting Seminar, Oct 2021
 - “The New Minimum Maintenance Standards”, Aviva, Clyde & Co., Black Sutherland, others, 2014 to 2020
 - “Delta-v from Curb impacts”, Advantage Forensics Workshop, June 2020
 - “Use of PC-Crash, Infotainment & Navigation Data for Injury Claims”, Oatley Vigmond, May 2020
 - “Expert Witness Training Series”, Advantage Forensics Workshop, Apr & May 2020
 - “Momentum Analysis & Crush Energy Analysis”, Advantage Forensics Workshop, Jan 2020
 - “How to Safely Examine a Hybrid Electric/Electric Vehicle”, Advantage Forensics Workshop, Mar 2019
 - “Retaining Experts on Claims”, Beard Winter Insurance Event, Toronto, Feb 2019
 - “Crash Data Recorder & Infotainment Evidence”, Black Sutherland, Beard Winter & others, 2017 to 2019
 - “Advanced Analysis of Slips, Trip & Falls”, Aviva, Hughes Amys, Travelers & others, 2002 to 2019
 - “Injury Risk vs. Delta-V for Drivers & Pedestrians”, Grillone Bekiaris, Oct 2014
 - “Collision Reconstruction: PC-Crash Theory”, Advantage Forensics Workshop, Jan 2016
 - “Left-turn Accelerations at Intersections”, Advantage Forensics Workshop, Dec 2015
 - “Nighttime Collision Investigation”, Hughes Amys, Nov 2013 & Kingsway Insurance, Feb 2009
 - “Segway Rider Introductory Training”, Advantage Forensics Workshop, Nov 2012
 - “Collision Reconstruction & Human Factors”, Bergel Magence, Aviva, TTC & others, 2007 to 2017
 - “School Injury Claims”, Ontario School Board Insurance Exchange, Guelph, Dec 2011

JOURNAL PAPERS & PUBLICATIONS

- “Human Factors Analysis of a Waiver: A Case Study”, 65th HFES Conference, 2021
- Technical paper reviewer for HFES Human Factors Conference: 2009 to 2020
- Technical paper reviewer for CARSP Road Safety Conference: since 2017
- “Categorizing Unintended Acceleration Collisions from EDRs”, 28th CARSP Conference Proceedings, 2018
- “Nighttime Photography & Videography: Techniques & Tips”, 61st HFES Conference Proceedings, 2017
- “Practical Tool for Ambient Illumination Comparisons at Dusk/Dawn”, 60th HFES Conference, 2016
- “Standardized Ambient Illumination Factor for Night Collisions”, WREX conference poster, 2016
- “Collision Data Recorders: What Can Big Brother See?”, WP Magazine, April 2016
- “The Hitchhiker’s Guide to Having Your Hand Run Over”, HFES Newsletter, Vol. 32(1), Feb. 2016
- “Practical Method for Forensic Testing of Fall Impact Effects on Human Spine”, 57th HFES Conference, 2013
- “Nighttime Collisions – The Dilemma of the Invisible Pedestrian”, WP Magazine, June 2013
- “The Changing World of Collision Fraud Investigation”, WP Magazine, May 2013
- Contributor to Standards:
 - ASTM F2774 “Practice for Manufacturing Quality Control of Consumer Trampoline Bed Material”
 - ASTM F2970 “Design, Manufacture, Installation, Operation, Maintenance & Inspection of Trampoline Courts”
 - ASTM F381 “Standard for Components, Assembly, Use & Labeling of Consumer Trampolines”
 - ASTM F3101 “Standard for Unsupervised Public Use Outdoor Fitness Equipment”
 - ASTM F3105 “Standard for Externally Loaded Strength Training Equipment”
 - ASTM F2374 “Standard for Design, Manufacture, Operation & Maintenance of Inflatable Amusement Devices”
 - NFSI B101.4 draft: “Standard for Measuring the Wet Barefoot Condition of Floors”
 - ANSI A-A-55617 & A-A-55619 “Medium & Heavy Duty Industrial Caster Standard”
 - ANSI/RESNA Wheelchair Standards Vol. 1 & 2

- ASTM F1679 "Standard for Using a Variable Incidence Tribometer"
 - ASTM F2508 "Standard for Validation, Calibration & Certification of Walkway Tribometers"
 - ASTM WK63322 "Premises Design Considering Snow/Ice Management for the Reduction of Pedestrian Falls"
 - ASTM WK72594 "Practice for Obtaining Acceleration Data on Water Slides Using Human Test Subjects"
 - ASTM WK48376 "Guide for Forensic Engineering Expert Reports"
- "The Slip Tester", Claims Canada, Feb 2012
- "Painted Concrete Surfaces: Slippery or Not?", Claims Canada National Claims Manual, Feb 2012
- "Foot Placement in Oblique Stair Descent", 55th HFES Conference Proceedings, 2011
- "Visibility of Tractor Trailer Reflective Strips", 53rd HFES Conference Proceedings, 2009
- "Snowmobile Deceleration: Ejected Occupant Scenarios", 19th CARSP Conference Proceedings, 2009
- "What is a 'Human Factors' Expert Anyway?", Claims Canada, April 2009
- "Road Design Issues in Motor Vehicle Collisions", Without Prejudice, Dec 2008
- "Transportation Engineering: Forensic Engineering of Collisions", Transportation Talk, CITE, Fall 2008
- "Validation of Dynamic Models for Power Wheelchairs using Working Model", Masters Thesis, University of Toronto, Oct 1998, and published in RESNA Conference Proceedings, 1998
- "Design of a Portable Elbow Torque Meter for Clinical Use", Undergraduate Thesis, UWO, 1996