

# Craig Alan Luker, P. Eng., P.E., ACTAR

## CURRICULUM VITAE

### RELEVANT EXPERIENCE:

- **Experienced:** Over 2,100 motor vehicle accidents and injury incidents investigated
- **Court qualified expert:**
  - in Supreme and Provincial Courts of British Columbia, US Federal Court, Superior Court of Washington State and Circuit Courts of Oregon
  - Qualified as an expert witness in the field of engineering and accident reconstruction in both civil and criminal matters
- **General collision analysis:** occupant kinematic response, speed determination, time-distance analysis, impact location, motor vehicle/pedestrian interactions, commercial vehicle incidents, low-speed collision analysis, motorcycle and bicycle analysis, occupant position determination, seat belt usage analysis, mechanical component failure causing motor vehicle accident, etc.
- **Measurements:** 3D laser scanning, photogrammetry, survey mapping and other measurement technologies
- **Visualizations:** 3D and 2D CAD diagrams and computer animations
- **Data extraction and analysis:** Event data recorder (EDR) downloads and interpretation for passenger vehicles and heavy commercial vehicles, extraction and interpretation of GPS data
- **Computer simulations:** use and have taught use of PC-Crash vehicle collision analysis software, use Virtual Crash, and have been technical advisor for development of ARAS simulation software
- **Commercial trucks and buses:** perform EDR and log book interpretation, airbrake performance analysis and testing, rollover analysis and load securement issues. Hold patent for truck in-use brake testing device. Designed cab protection rack (i.e. "headache rack") testing device. Developed algorithm for predicting articulated vehicle off-tracking used in ARAS Advanced Articulation. Articulated vehicle impact analysis
- **Pedestrian Safety:** premises liability issues related to building code conformity, walkway slip resistance, ramp slopes, vertical offsets, sidewalk shape, visibility and other slip/trip and fall issues
- **Vehicle testing:** perform vehicle dynamics testing to measure acceleration capability, braking performance, ABS braking effects, vibration, ride quality, steering inputs, human performance, etc. Design and build custom measuring equipment when required
- **Visibility:** measure sightlines and visibility obstructions, lighting measurements
- **Video Analysis:** forensic analysis of video footage from surveillance cameras and other sources. Developed a method to determine detailed speed time histories from video footage
- **Human Factors:** analysis and consideration of human factors aspects related to collision reconstruction such as, perception-response time (PRT), gap acceptance, walking speed, acceleration rates, typical driver emergency behavior, etc.

### ACADEMIC QUALIFICATIONS:

- 1991 Bachelor of Engineering - Mechanical - Royal Military College of Canada (Kingston, Ontario)
- 2023 Master of Science in Engineering - Interdisciplinary Engineering - Purdue University
- Ballistics course - Royal Military College of Science, England
- The Engineering of Measurement Systems - Stein Engineering Services Inc.
- The Dynamics of Measurements Systems - Stein Engineering Services Inc.
- Advanced PC-Crash Course - Vancouver, BC
- CDR System Operator Course - Las Vegas, NV

- CDR Technician Course - Winnipeg, MB & Burien, WA
- CDR Data Analyst Course - Winnipeg, MB
- CDR Technician Level I & II Update, Seattle, WA
- IPTM CDR Analyst Course Level 1 – Burien, WA
- Accessing and Interpreting Heavy Vehicle Event Data Recorders (HVEDR), Oxnard, CA (twice)
- PhotoModeler Collision Investigation, Longmont, CO
- Purdue University - IE53300 Industrial Applications of Statistics (Design of Experiments)
- Purdue University - CE59700 Digital Photogrammetric Systems
- Purdue University - CE59700 Global Sustainable Engineering
- Purdue University - IE55800 Safety Engineering
- Purdue University – CS50100 Computing For Science And Engineering
- Purdue University – ENE55400 Globalization and Engineering
- Purdue University – PSY/IE577 Human Factors in Engineering
- Purdue University – SYS53000 Practical Systems Thinking
- Purdue University – ME53900 Introduction to Scientific Machine Learning
- Purdue University – ME58100 Numerical Methods in Mechanical Engineering
- Technical Reconstruction of Heavy Truck Crashes – Denver, CO
- FARO Laser Scanner Training – Bellevue, WA
- Input-Ace Forensic Video Analysis Course – Surrey, BC
- Input-Ace Video Evidence Training Symposium 2020 – Virtual
- Input-Ace Video Evidence Training Symposium 2021 – Virtual

#### **PROFESSIONAL WORK EXPERIENCE:**

- 2024 - Present - VP Canada & Northwest, Compass Consulting Engineers
- 2008 - 2024 - Senior Collision Reconstructionist, Luker Forensic (owner)
- 2010 - 2015 - Technical Advisor to ARAS360 Inc. collision reconstruction software company
- 2008 - 2013 - Partner, Hanna Test Centre vehicle test facility (partner)
- 2005 - 2008 - Senior Forensic Engineer, Forensic Dynamics LLC (owner)
- 1996 - 2005 - Accident Reconstruction Engineer, Forensic Dynamics Inc. (partner)
- 1996 - 2001 - Co-Founder of VS Visual Statement Inc., market leader of accident drawing and animation software for the police market.
- 1995 - 1996 - Accident Reconstruction Engineer, Forensic Dynamics Inc.
- 1994 - Project Engineer, Weyerhaeuser Canada Ltd. (Kamloops, B.C.)
- 1993 - 1994 - Project Engineer, Thompson-Nicola Engineering Company Ltd.
- 1992 - 1993 - Armament Systems Engineer - Department of National Defence (Cold Lake, Alberta)

#### **PROFESSIONAL ASSOCIATIONS:**

- Association of Professional Engineers & Geoscientists of British Columbia (APEGBC) - Professional Engineer (P.Eng.), Registration #21,666
- State of Arizona Board of Technical Registration – Professional Engineer (P.E.), Registration #47,059
- Accreditation Commission for Traffic Accident Reconstructionists (ACTAR) – Member #1923
- Society of Automotive Engineers (SAE) – Member
- National Society of Professional Engineers (NSPE) - Member
- Washington Association of Technical Accident Investigators (WATAI) - Vice President 2005 to 2009

## CERTIFICATIONS:

- Certified Crash Data Retrieval (CDR) Technician
- Certified Crash Data Retrieval (CDR) Data Analyst
- Certified XL Tribometrist (CXLT) – previously certified in use of English XL Variable Incident Tribometer to measure and interpret the slip resistance of walking surfaces (currently expired)
- Certified Law Enforcement Instructor - Arkansas Commission on Law Enforcement Standards and Training
- Motorcycle Driver's License Endorsement

## RESEARCH & PUBLICATIONS:

- **Inventions** - Patent #6,332,354 "Method and Apparatus for Determining Vehicle Brake Effectiveness"
- **Publications** -
  - "Method to Determine Instantaneous Speeds and Acceleration from Surveillance Video", C. Luker, SAE 2016-01-1469.
  - "Comparisons of Devices for Measuring Acceleration vs. Time in Braking Tests", C. Luker, SAE 2008-01-0180.
  - "Laboratory Melting Performance Comparison: Rock Salt with and without Pre-Wetting", Luker, Rokosh & Leggett (Forensic Dynamics Inc.) - Presented to the Transportation Research Board Sixth International Symposium on Snow Removal and Ice Control Technology, Spokane, WA, June 7, 2004.
  - "Performance Comparison: NSC Minerals Inc. Salts to Standard Road Salt", Luker & Rokosh (Forensic Dynamics Inc.) - Privately funded by NSC Minerals Inc.
  - "An Investigation into the Safety Aspects Related to Bunk Securement of BC Logging Trucks" - Funded by BC Ministry of Transportation and Highways.
- Member of SAE Accident Investigation and Reconstruction Practices (AIRP) Technical Committee's Drag Sled Group

## TEACHING:

- Collision Reconstruction with PC Crash, Dubai, U.A.E.
- Vista for State Patrol, AK
- Computer animation - UBC Law School Advanced Evidence seminar
- Evidence Preservation Lecturer - ICBC Estimators
- De-Mystifying Automobile Black Boxes – Trial Lawyers Association of BC
- Overview of PhotoModeler – Crashteam Conference, August 2008
- Overview of PC Crash – Crashteam Conference, August 2008
- CDR Update – Crashteam Conference, August 2008
- Vehicle Testing Tools – Crashteam Conference, August 2008
- Forensic Mapping with Total Stations for Port Moody Police, March 2011
- Serious Crash Seminar to Crown Counsels & RCMP - Salmon Arm, BC, December, 2010
- Design of Experiment for Collision Analysts and Reconstructionists (RCMP), Chilliwack, BC, January 2013
- Using Accident Reconstruction to the Best Effect - Vancouver February 2015

- Advanced Momentum Analysis Seminar for RCMP - March 2021

Compass Consulting Engineers