CURRICULUM VITAE

Mark Fabbroni, B.A.Sc., M.A.Sc., P.Eng.

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EXPERT SUMMARY

Mr. Mark Fabbroni is Vice President of 30 Forensic Engineering's Collision Reconstruction and Trucking group, a multidisciplinary service offering specializing in collision reconstruction and automotive failure analysis. Mark began his career in vehicle testing and root cause failure analysis, and spent the subsequent two decades in the forensic industry investigating over 2,000 incidents. His approach combines classical reconstruction research with state-of-the-art methods to incorporate insights derived from event data recorders (EDRs), advanced driver assistance systems (ADAS), and digital video. Mark has held engineering licenses in four Canadian jurisdictions and is currently a member of Professional Engineers of Ontario, The Association of Professional Engineers and Geoscientists of Alberta, Engineers and Geoscientists British Columbia, Society of Automotive Engineers, Canadian Association of Technical Accident Investigators and Reconstructionists (CATAIR), and the Accreditation Commission for Traffic Accident Reconstruction (ACTAR). He is also a LEVA Certified Forensic Video Technician (CFVT). He has been qualified as an expert witness in mechanical engineering, collision reconstruction, cargo securement, and driver behaviour, and has experience providing expert evidence at trials, mediations, summary judgments, arbitrations, and depositions.

SPECIALIZED PROFESSIONAL COMPETENCIES

Motor Vehicle Collision Investigation and Reconstruction Involving:

- Commercial Vehicles, Automobiles, Trains, Transit Vehicles, Motorcycles, Bicycles, and Pedestrians
- Multi-disciplinary Teams including Transportation Engineers, Biomechanists, and Human Factors experts
- Analysis of Data from Passenger and Heavy Vehicle Event Data Recorders ("Black Boxes"), GPS, and telematics systems
- Dash Camera and CCTV Video Analysis
- Supplemental Restraint System Use and Performance
- Advanced Driver Assistance System Performance
- Post-Collision Vehicle Examination
- Mechanical Fitness Assessment & Vehicle Testing
- Collision Scene Examination
- Collision Avoidance Assessments
- Collision Simulation

Product Failure:

- Analysis of Automotive Component Failures including tires, wheel separations, and airbags
- Defect/Recall Investigations
- Analysis of Mechanical Failures

ACADEMIC BACKGROUND

Master of Applied Science (Mechanical Engineering), NSERC Scholar, University of Toronto, 2004
M.Sc. Thesis: Flame Propagation in Natural Gas Fueled Direct Injection Engines

Bachelor of Applied Science (Honours Mechanical Engineering) with Distinction, Dean's Honours List, Mechatronics Option Co-operative Education, University of Waterloo, 2002

ADDITIONAL COURSES

- Institute of Police Technology and Management (IPTM), University of North Florida – ACTAR Test Preparation, December 2025
- LEVA Level 2 – Digital Multimedia Evidence Processing, October 2024
- LEVA Level 1 – Forensic Video Analysis & the Law, June 2023
- World Reconstruction Exposition, WREX, Orlando, Florida, May 2016 & April 2023
- 2022 CATAIR Annual Conference, Ontario Police College, Aylmer, Ontario, August 2022
- 24-hour Crash Data Retrieval (CDR) Analysis and Applications Course for Engineers, Crash Data Specialists LLC, Toronto, February 2019
- Crash Test Team Member, CATAIR AGM and Conference, Ontario Police College, Aylmer, Ontario, August 2018 & 2019
- SAE World Congress, 2006 – 2020
- CDR User's Conference, 2008 – 2017
- Northwestern University Heavy Vehicle Crash Reconstruction Course, 2015
- SAE Accessing and Interpreting Heavy Vehicle Event Data Recorders, 2014
- CATAIR 30th Anniversary National Conference and Annual General Meeting, Aylmer, 2014
- 21st Annual TIDA Industry Seminar, Trucking Industry Defense Association, Orlando, 2013
- CDR Technician Course, Toronto, 2006
- CDR Data Analyst Course, Toronto, 2006, 2010, 2012 & 2013
- PC Crash Training Seminars, Toronto, 2009 & 2013
- Motorcycle Operator Training Course, Durham College, Oshawa, 2005

PROFESSIONAL EXPERIENCE

30 Forensic Engineering

Vice President and Practice Lead, Collision Reconstruction & Trucking
2018 – Present, Toronto, ON

- Collision reconstruction group lead and leader of commercial vehicle loss service offering, responsible for management of the team including establishing budgets, procuring equipment and software, planning training, monitoring performance, running group meetings, and ensuring that the group's methods and resources are state of the art in addition to lead investigator duties
- Member of the executive leadership team responsible for the management, strategic planning, and governance of 30 Forensic Engineering

Practice Lead/Principal, Collision Reconstruction & Trucking
2013 – 2018, Toronto, ON

- Collision reconstruction group lead responsible for management of the team including establishing budgets, procuring equipment and software, planning training, monitoring performance, running group meetings, and ensuring that the group's methods and resources are state of the art in addition to Senior Associate duties

Senior Associate, Collision Reconstruction
2010 – 2013, Toronto, ON

- Lead investigator and supervisor of multidisciplinary technical investigations
- Mentor and manager of junior engineers

Associate, Collision Reconstruction
2006 – 2010, Toronto, ON

- Investigator of technical investigations primarily involving motor vehicle collisions and mechanical failures through examination, simulation, and reconstruction

ABC Air Management Systems Incorporated

Development Engineer
2005 – 2006, Toronto, ON

- Coordinated or performed noise, vibration, performance, and durability testing of air induction systems to ensure compliance with OEM specifications
- Analysis of product failures, recommendation/evaluation of design changes

General Motors Canadian Regional Engineering Centre

Test Engineering
2005 – 2005, Oshawa, ON

- Designed and conducted bench-level noise, vibration, performance, and durability tests
- Instrumented vehicles to conduct field-level testing of components

University of Toronto, Dept. of Mechanical & Industrial Engineering

Graduate Researcher
2002 – 2004

- Conducted experiments to investigate natural gas combustion in direct injection (diesel) engines
- Taught engineering fundamentals to students via tutorials and laboratory experiments

Toyota Motor Manufacturing Canada

Quality Control Intern
2001 – 2001, Cambridge, ON

- Conducted root cause investigations to address noise, vibration, handling, drivability, or quality problems and evaluated countermeasures

Paulstra CRC

Engineering Intern
2001 – 2001, Grand Rapids, MI, USA

- Performed noise and vibration testing of various vehicles on the road and in the lab

Messier-Dowty Inc.

Stress Analysis Engineering Intern
1999 – 1999, Ajax, ON

- Performed strength, fatigue, buckling, and Finite Element Analysis of various aircraft landing gear components

PROFESSIONAL SOCIETIES AND ASSOCIATIONS

- Member, Professional Engineers of Ontario (PEO)
- Member, Association of Professional Engineers and Geoscientists of Alberta (APEGA)
- Member, Engineers and Geoscientists British Columbia (EGBC)
- Former Member, Association of Professional Engineers and Geoscientists of the Province of Manitoba
- Member, Society of Automotive Engineers (SAE)
- Member, Canadian Association of Technical Accident Investigators and Reconstructionists (CATAIR)
- Associate Member, Law Enforcement & Emergency Services Video Association International Inc. (LEVA)
- Member, Accreditation Commission for Traffic Accident Reconstruction (ACTAR)

PUBLICATIONS AND SPEAKING ENGAGEMENTS

- Paquette, M., Young, N., Prentice G., & Fabbroni, M. (2024). Pole/Tree Impact Analysis. EVU Congress 2024.

- Miholjcic, D. and Fabbroni, M. (2019) A Study of the Performance of Automatic Emergency Braking (AEB) Systems Equipped on Passenger Vehicles for Model Years 2013 to 2018 (Report No. 2019-01-0416). Society of Automotive Engineers.
- Guest Lecturer: "Collision Reconstruction", Course MIE 1708, University of Toronto, 2018 to 2025.
- “Don’t Judge a Man Until You’ve Driven a Mile in His Brake Shoes”. LinkedIn article, May 9, 2017.
- “The Attractive Tractive: Proving that a Lack of Winter Tires Contributed to a Collision”. Without Prejudice Vol. 81 No. 7 (March 2017): 6-13. Fabbroni, M. A.
- Fabbroni, M., Rovt, J., & Paquette, M. (2017). A Study of In-Service Truck Weights (Report No. 2017-01-1424). Society of Automotive Engineers.
- “Separating Fact from Friction”. Canadian Underwriter, January 2013: 48-50. Fabbroni, M. A.
- “Big Brother 2013: Event Data Recorders, aka vehicle “black boxes”, are at a tipping point”. Claims Canada, December/January 2013: 36-37. Fabbroni, M. A.
- “Ignition by Shielded Glow Plug in Natural Gas Fueled Direct Injection Engines”. Proceedings of ASME ICEF 2011, ICEF2011-60085, ASME Internal Combustion Engine Division 2011 Fall Technical Conference, October 2-5, 2011, Morgantown, West Virginia. Fabbroni, M. A., Wallace, J. S.
- “Flame Propagation in Natural Gas Fueled Direct Injection Engines”. Proceedings of ASME ICEF 2010, ICEF2010-35182, ASME Internal Combustion Engine Division 2010 Fall Technical Conference, September 12-15, 2010, San Antonio, Texas. Fabbroni, M. A., Wallace, J. S.
- “An Optically-Accessible Combustion Apparatus for Direct-Injection Natural Gas Ignition Studies”. Proceedings of ASME ICEF 2007, ICEF2007-1763, ASME Internal Combustion Engine Division 2007 Fall Technical Conference, October 14-17, 2004, Charleston, South Carolina. Fabbroni, M. A., Cheng, S. X., Abate, V., Wallace, J. S.
- “Ask the Expert: Wouldn’t a Heavier Vehicle Take Longer to Stop”. Without Prejudice Vol. 71 No. 9 (May 2007): 30-31. Fabbroni, M. A.
- “Flame Propagation in Natural Gas Fueled Direct Injection Engines”. Fabbroni, M. A. Master’s Thesis, Department of Mechanical and Industrial Engineering, University of Toronto. Ottawa: Library and Archives Canada, 2005. ISBN: 0612954897.

EXPERT TESTIMONY

- Qualified as an expert witness in the field of mechanical engineering by the Ontario Superior Court of Justice
- Qualified as an expert witness in collision reconstruction by the Ontario Superior Court of Justice
- Qualified as an expert witness in cargo securement by the Ontario Superior Court of Justice
- Qualified as an expert witness in the dynamics of secured and unsecured cargo at arbitration
- Qualified as an expert witness in driver behaviour and responses to collisions, and human factors as it pertains to drivers, by the Ontario Superior Court of Justice