



**COLLISION
AND INJURY
DYNAMICS**

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ALVIN LOWI III, MS, PE
Senior Consulting Engineer, Partner
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Professional Competence

Structural and mechanical forensics involving passenger and commercial vehicles and trucks, specializing in automotive systems failure analysis, wheel and tire forensic analysis and vehicular accident reconstruction. Subspecialties include mechanics and dynamics of vehicular collisions, occupant kinematics and restraint systems, vehicle failure and fire analysis, Crash Data Retrieval and analysis, insurance fraud investigations, computer-aided structural and dynamic analysis, crash and trajectory analysis, structural analysis and design assessment for mechanical failure analysis evaluation, mechanical test and data acquisition.



Education and Certification

M1 Licensed Motorcycle Rider; 2010

Registered Professional Mechanical Engineer, California, License No. M 27413; 1991

Master of Science in Aerospace Engineering (Structural Mechanics)

- University of Southern California; 1987

Bachelor of Arts in Applied Physics and Mechanics

- Cornell University; 1983

Training

World Reconstruction Exposition; 2016, 2023

Specialty Equipment Manufacturers Association (SEMA)

- Electric Vehicles, Advanced Driver Assist Systems; 2023

Crash Safety Solutions, LLC

- Human Factors Analysis in Accident Reconstruction using Interactive Driver Response Research (IDRR); 2019

Crash Data Retrieval Users Conference; 2008, 2010, 2014

Tire Failure Mechanics and Forensic Examination; 2014

Crash Data Retrieval System Analyst Certification; 2012

Society of Automotive Engineers

- Connected Vehicle Automation; 2018
 - Driver Distraction from Electronic Devices; 2012
 - Accident Reconstruction TOPTEC; 2001
 - Stapp Crash Conference; 1992
- Advanced Collision Reconstruction with CDR Applications; 2011

Engineering Dynamics Corporation

- HVE-3D Advanced Accident Reconstruction; 2011
- HVE-2D Advanced Accident Reconstruction; 2002

Motorcycle Safety Foundation – Basic Rider Course; 2009

Collision Safety Institute

- Crash Data Retrieval System Operators Certification; 2004, 2008

International Association of Chiefs of Police

- Grade Train Crossing Collision Investigation; 2003

Southwestern Association of Technical Accident Investigators

- Vehicle Crash Testing; 2019
- Monte Carlo Methods and Human Factors Analysis in Accident Reconstruction; 2019
- Pole Collision Analysis, Momentum Analysis, Tire Forensic Analysis; 2001

Lawyers and Judges Publishing, Inc.

- Accident Reconstruction and Human Factors; 2001

National Institute of Forensic Sciences

- Low-Speed Collision Analysis Course; 1999
- Low-Speed Collision Analysis and Biomechanics Course; 1998, 1999
- Advanced Traffic Accident Reconstruction and Momentum Methods Course; 1997
- Traffic Accident Reconstruction II Course; 1997
- Biomechanics of Injury from Traffic Collisions Course; 1996
- Traffic Accident Scene and Damaged Vehicle Investigation Methodologies Course; 1994

Professional Experience

2004 – Present

Collision and Injury Dynamics, Inc.

Employed as a Forensic Consulting Engineer, providing mechanical and automotive engineering consulting services involving passenger and commercial vehicles, failure investigation, accident reconstruction, engineering forensics and fraud investigation, mechanical design evaluation and product liability. Clients include law firms, manufacturers, insurance and auto rental companies, investigative and city agencies.

2000 – 2004

Vollmer-Gray Engineering Laboratories (Senior Staff Engineer)

Employed as a Forensic Consulting Engineer, providing mechanical and automotive engineering consulting services involving passenger and commercial vehicles, failure investigation, accident reconstruction, engineering forensics and fraud investigation, mechanical design evaluation and product liability analysis. Clients



include law firms, manufacturers, insurance and auto rental companies, investigative and city agencies.

1991 – 2000

Consulting Engineer (Self-Employed)

Providing mechanical and automotive engineering consulting services involving passenger and commercial vehicles and equipment, failure investigation, accident reconstruction, engineering forensics and fraud investigation, mechanical design evaluation and product liability. Clients include law firms, manufacturers, insurance and auto rental companies, investigative and city agencies.

1980 – 2000

Hughes Electronics Corporation, Hughes Space and Communications Company, Environmental Sciences and Design Support Operations (Technical Staff, Project Engineer, Senior Project Engineer, Department Manager)

Responsible for all aspects of personnel management of engineering staff engaged in structural analysis and test of spacecraft and ground handling equipment, including workplace and laboratory OSHA procedures.

1979 – 1999

Lion Engineering Company, DAECO Fuels and Engineering Company (Project Engineer, Structural and Dynamic Analysis, Mechanical Testing)

Under direction from the Principal Investigator, performed structural and dynamic analysis of passenger and commercial, and racing vehicle chassis, suspension and engine components, aircraft engines and components, vehicle engine and equipment fire investigation, passenger vehicle and light duty truck wheel and tire failure investigation and analysis, dynamometer-based engine, chassis and emissions performance testing.

Teaching Experience

National Institute of Forensic Sciences, Performance and Considerations Involving Airbag Supplemental Restraints; 1999

National Institute of Forensic Sciences, Advanced Traffic Accident Reconstruction and Momentum Methods Course, Physics of Vehicle Motion; 1997

Organizations

American Motorcyclist Association (AMA)

American Society of Mechanical Engineers (ASME)

American Society for Testing and Materials (ASTM)

E30 (19-02) Forensic Sciences Standards Committee

E30 (19-06) Forensic Sciences Committee

E30 (19-05) Digital and Multimedia Evidence Committee

E58 (19-03) Forensic Engineering

National Association of Professional Accident Reconstruction Specialists (NAPARS)

Society of Automotive Engineers (SAE)

Technical Paper Reviewer, Accident Reconstruction and Vehicle Systems

Southwestern Association of Technical Accident Investigators (SATAI)



Forensic Qualifications

Testimony in Federal, Superior and Municipal Courts in California, Nevada, Arizona, Washington and Louisiana

Biographical Sketch

Mr. Lowi was born in Torrance, California, in 1961 and is a licensed Mechanical Engineer in the State of California. He graduated with a B.A. in Applied Physics and Macro-body Mechanics from Cornell University, Ithaca, New York, in 1983. After returning to the Los Angeles area under a Fellowship from Hughes Aircraft Company, he then completed his M.S. Degree in Aerospace Engineering from the University of Southern California in 1987, with emphasis in structural mechanics and dynamics. He has been involved in hands-on and theoretical automotive and mechanical engineering technical work for more than 30 years.

As a student, Mr. Lowi worked for his father in many capacities, all involving automotive and vehicle design and research. He grew up working in an automotive systems laboratory, supporting engine and chassis dynamometer testing, race vehicle performance analysis and vehicle restoration, repair and maintenance. From 1980-2000, Mr. Lowi was employed with GM/Hughes Space Communications Company as a member of the engineering staff, progressing to Department Manager, responsible for technical and managerial oversight of structural and dynamic analysis, design criteria and dynamic test of spacecraft and ground support equipment and mechanisms. He is highly experienced in the field of pyrotechnic devices and pyroshock high rate transient vibrations, both sensing measurement and prediction. During this time he has also developed an extensive background in the fields of material and structural analysis, which include rigid and flexible body dynamics, structural test and data acquisition, computer-aided finite element analysis (FEA) methods, random and nonlinear vibrations, structural failure investigation and reconstruction analysis, thermal distortion, combined thermal/vibratory fatigue analysis, and metallurgical evaluation. He has also been trained in occupational workplace safety procedures and compliance with OSHA standards, particularly in the operation of ground support equipment such as cranes and lift trucks.

Since becoming an independent consultant in 1991, Mr. Lowi has been retained in over 2500 technical and forensic matters in the fields of automotive systems, accident reconstruction and mechanical engineering. As an automotive engineering consultant, Mr. Lowi has experience in analysis, design and performance assessment of automotive safety equipment including passenger restraint systems (airbags, seats, seatbelts, child restraints), brake systems, steering systems, suspension systems and fuel delivery systems (accelerator, cruise control). His forensic analysis abilities include vehicle systems and mechanical failure, wheel and tire forensic analysis, and vehicle fire investigation. His engineering forensics abilities also include motor vehicle accident reconstruction, low speed collision analysis, occupant dynamic and kinematic response in vehicular crash, site and vehicle inspection methodologies, accident cause-factor analysis, including damage pattern matching for fraud investigations. He has performed dynamic stability analysis of two and four wheeled vehicles, bicycle road crash testing and analysis, and structural analysis of road and mountain bicycle structure and components. He also has experience with commercial freight and passenger vehicles, particularly with respect to door/window exits, wheelchair and tailgate lifts, and suspension structures. Major projects include analysis and design evaluation of a passenger bus rear axle structure for the Los Angeles Metropolitan Transit Authority, and analysis and design evaluation of a retrofit wheelchair lift assembly in the doorway of a passenger bus for the New York Metropolitan Transit Authority.



Reports and Publications

"Quantifying Engine Braking for Various Common Street Motorcycles, H. Jansen, B. LeBlanc, C. Wilhelm, T. Shaw, A. Lowi, SAE 2020-01-880, April 14, 2020

"Assessment of Supplemental Airbag Restraint System for Sound Pressure Noise Field During Deployment," Impact General, National Institute of Forensic Sciences Report, 1997

"Procedure for Standardizing the Dynamometer Test Performance of Spark and Compression Ignition Engines," (Co-authored with Alvin Lowi Jr.), SAE Conference, 1982

