

ROLAND HOOVER
Motorcycle and Vehicle Engineering Expert

Provide technical investigations, crashworthiness and engineering, and accident reconstruction analysis involving passenger cars, light trucks, SUV's, motorcycles, ATV/UTV, and off-road vehicles.

Motor Vehicle Design, Development and Testing – from requirements, concept through validation field-testing of complete vehicles, including manufacturing. Failure Mode Effects Analysis (FMEA) for products & process, DVP&R development, as well as writing trouble shooting and service procedures. Testing pre-production and production vehicles in extreme environments at or above rated capabilities. Federal Motor Vehicle Safety Standard (FMVSS) and other regulatory requirement compliance.

Motor Vehicle System Design, Development and Testing – conventional and anti-lock brakes; electronic stability control; traction control systems; driver dynamics modes; adaptive cruise control; lane keep assist; powertrain; suspension; steering; tires; fuel intake, storage, and delivery; emissions controls; electrical; and vehicle dynamics.

Motor Vehicle Failures – air bag; structural; suspension; axle, spindle failure and separation; wheel and bearing failure; transmission failure; sudden acceleration; cruise control; steering; frame rail; wheel separation; steering; ABS; electronic stability control; electronic braking distribution; driver assist features; transmission; fuel injection and electronic engine controls; car, light truck and motorcycle brakes; throttle by wire; electronic throttle control; wheel and chassis vibration; and vehicle handling dynamics.

Motor Vehicle Repair – diagnosis and repair of engine, transmission, transfer case, differential and final drive, suspension and steering systems, conventional and anti-lock brake systems, stability/traction control, fuel system, emissions systems, climate control, repair with aftermarket parts, modifications, interaction of dealers and manufacturers, and Safety Recall repairs. Proper use of service repair tools and equipment, repair procedures and shop operations.

Manufacturing Process and Equipment – hydraulic, pneumatic and DC powered machine centers, tools, hand tools, torque verification means and methods, Statistical Process Control (SPC), stamping, welding (TIG/MIG), tube and plate bending, roll forming, conventional and CNC machining, mistake and error proofing, operator protection means and methods, operator ergonomics, operator lift assists, robotic work stations, and compliance testing machines.

Vehicle Accident Reconstruction – inspection of damaged vehicle and components. Site inspection. Review of police report, witness statements, scene photos and other documents. Computational recreation of the accident using facts and scientifically accepted methodology to determine how the accident occurred, including elements within the accident. All to determine cause(s) of the accident, including the resulting severity.

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Motorcycle Design, Development, Testing, and Repair – of motorcycle conventional and anti-lock brakes; wheels, clutch, forks, shocks, frames and accessories to FMVSS, DOT, and TUV standards; and modifications and evaluations of motorcycle dynamic behaviors. Motorcycle repair with aftermarket parts, motorcycle modifications, interaction of dealers and manufacturers, and Safety Recall repairs.

Motorcycle Rider Actions – Participation in charity rides, group rides, and product demonstration rides; involvement in motorcycle preparation for racing events; commuting 150+ miles a day in heavy traffic on various motorcycles; motorcycle dynamics testing and evaluation at or above rated capabilities.

PROFESSIONAL EXPERIENCE

2017 to present **Robson Forensic, Inc.**
Associate

Provide technical investigations, analysis, reports, and testimony toward the resolution of commercial and personal injury litigation involving vehicle collisions, vehicle crashworthiness and engineering issues, mechanical defects and malfunctions, component failure analysis, and vehicle repair issues for passenger cars, light trucks, SUV's, motorcycles, ATV/UTV, and off-road vehicles.

2016 to 2017 **Performance Machine**
R&D Engineering Manager

Led a team of engineers designing and developing new components and accessories for motorcycles. Provided R&D services and manufacturing supply chain to OEMs like BMW Motorrad, Harley Davidson, Victory, Indian, Roland Sands Design, Burly Brand, Progressive Suspension, and all the aftermarket wheels and components for Performance Machine. Worked with other design companies for developing electronics and phone apps for suspension systems and other accessories for motorcycles, UTV's, and bicycles. Led a team of R&D Engineers to develop new shock and fork products with multiple patents for the motorcycle aftermarket and introduce more development component projects in UTV and Truck applications while meeting strict TÜV and DOT standards.

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- 2010 to 2016 **Hyundai Kia America Technical Center, Inc. (HATCHI)**
Senior Chassis Engineer
Worked for continuous improvement of the ride and handling by tuning the steering, dampers, bushings, brakes and tires in many Hyundai and Kia models. Performed SAE and FMVSS dynamics testing and creating new specialized vehicle dynamics tests to discover vehicle weaknesses in physical suspension components and software designs of the ESC, EBD, ECS, ABS, and more. Provided detailed analysis and solutions to improve the components, hardware and software design of the vehicle systems to enhance the driving experience and safety for our customers. Benchmarked competitor vehicles and brought new models from initial prototypes to competitive production vehicles that won awards.
- 2004 to 2012 **Wildwood Calvary Chapel**
FOH Audio and Video Engineer
Applied engineering understanding of vibration optimization to Sound Systems, Video Systems, and Live Sound Mixing for concerts and festivals exceeding 5000 people. Mixed sound for a variety of artists, and would live broadcast weekly through podcasts and the web. Mentored 4 others to assist in the duties and eventually run the production themselves.
- 2003 to 2009 **Sorenson Engineering, Inc.**
Engineering Manager
Worked with a few other managers to nearly triple the revenue of a company supplying Precision Micro-Machined products in a few years. This was accomplished by getting ISO9001 certification in 6 months, implementing Epicor ERP system company-wide by replacing an old MS Access system to reduce losses, and developing a new sector of micro-assembly to the business. Led a team of engineers who developed innovative CNC/Robotic/PLC machines and attachments and became involved in the design and development of new automated machine centers and assembly machines.
- 2000 to 2003 **Dodge Motorsports at Daimler Chrysler**
NASCAR Chassis and Suspension Engineer
(Contracted through Ghafari Associates)
Dodge Motorsports Racing Division providing factory engineering and services support to the top Dodge teams in NASCAR and NHRA. Supported Dodge Teams for Multiple Wins and Championships.

Developed Shock Absorber improvements, Tire models, frame design and validation, and suspension components to improve the top teams. Provided instrumentation, test data analysis, and even test driving for various aerodynamics, engine, and chassis tests. Worked very closely with the teams, Calspan, Ohlins and Penske for damper and 7- post testing, and Bill and Doug Milliken for chassis software modeling/prediction tools.

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1999 to
2000 **K&N Engineering**
Tool Designer

Designed aftermarket air filters, both the common injection molded type and the custom carbon fiber type for automotive applications. Designed the 3D injection molds and machining routines/ code and tooling for high speed molding machines by using SolidWorks.

1994 to
1998 **Lance Gamma**
Custom Motorcycle Builder/Designer

Custom Builder for street legal GP style motorcycles Suzuki RG500's and Yamaha RD500's. Rebuilt and modified four cylinder 2-stroke motors and transmissions for high performance and racing applications. Designed and fabricated custom fiberglass bodywork, re-tuned forks and shocks, and fabricated custom components for air filters, oil tanks, suspension and exhausts out of aluminum and titanium. Performed high performance ride testing and race preparation.

EDUCATION

B.S., Mechanical Engineering, California State Polytechnic University-Pomona, 2000

Continuing Education:

Motorcycle Parts and Accessories Technical and Sales Training Clinic, Powersports University, 2016

Introduction to Brake Control Systems: ABS, TCS, ESC Seminar, SAE, 2015

Applied Vehicle Dynamics, SAE, 2013

PROFESSIONAL MEMBERSHIPS

SAE – Society of Automotive Engineers