

Exponent®
Engineering & Scientific Consulting

Todd Frank, P.E.

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Professional Profile

Mr. Frank's expertise is in accident reconstruction, rollover analysis, computer simulation, photogrammetry, and 3D laser scanning. He has experience in these areas with a variety of vehicles that includes motorcycles, passenger cars and trucks, heavy trucks, and off-highway recreational vehicles.

Mr. Frank is also an experienced motorcycle operator with specialized expertise in motorcycle accident reconstruction and handling dynamics.

He is proficient in utilizing computer applications to conduct accident reconstructions and present results using 3-D visualization techniques. He has extensive experience conducting single-moving and two-moving full-scale crash tests as well as vehicle handling tests. He has tested heavy trucks, passenger cars, motorcycles, and bicycles.

Mr. Frank has experience with designing custom fixtures for specific test configurations, test instrumentation, and the analysis of data collected during various test types.

Prior to joining Exponent, Mr. Frank had 10 years of experience in litigation animation working as a Project Engineer for Demonstratives, Inc./Engineering Animation, Inc. in Ames, Iowa. His responsibilities included performing accident reconstruction using photos, drawings, maps, USGS Data, and various other types of data and working on cases of patent infringement.

Academic Credentials & Professional Honors

B.S., Mechanical Engineering, Iowa State University, 1995

Licenses and Certifications

Professional Engineer Mechanical, Arizona, #51098

Professional Affiliations

Society of Automotive Engineers (member)

American Society of Mechanical Engineers (member)

Southwestern Association of Technical Accident Investigators, Inc. (SATAI) (member)

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Publications

Coelho, C. J., Bailey, J. D., Frank, T. A., & Cades, D. M., (2022, December 21). Advanced driver assistance systems (ADAS) for motorcycles? The Defense News - Washington Defense Trial Lawyers. https://www.wdtl.org/article_content.asp?edition=2§ion=26&article=130

Frank, T., Sharpe, A. When and How to Conduct a Virtual Inspection. Texas Association of Defense Counsel (TADC). Summer Magazine 2020, p.45.

Frank TA, Fowler GF, Garman CMR, Sharpe SS. Motorcycle Rider Inputs During Typical Maneuvers. SAE Technical Paper 2020-01-1000, 2020.

Garman CMR, Sharpe SS, Frank TA, Fowler TA. Motorcycle Rider Kinematics during Low and High Speed Turning Maneuvers. SAE Technical Paper 2018-01-0536, 2018.

Fowler GF, Ray RM, Huang S, Zhao K, Frank TA. An examination of motorcycle antilock brakes systems (ABS) in reducing crash risk. ASME Technical paper, 2014, IMECE2014-36910.

Frank TA, Smith JW, Fowler GF, Carter JW. Simulating moving motorcycle to moving car crashes. SAE Technical Paper Series, 2012-01-0621.

Frank TA, Babic D, Williams P. Condition of the motorcycle steering head assembly after crash testing. SAE Technical Paper Series, 2012-01-0619.

Smith JW, Frank TA, Bosch KE, Fowler GF, Carter JW. Full-scale moving motorcycle into moving car crash testing for use in safety design and accident reconstruction. SAE Technical Paper Series, 2012-01-0103.

Frank TA, Smith JW, Hansen DC, Werner SM. Motorcycle rider trajectory in pitch-over brake applications and impacts. SAE Technical Paper Series, 2008-01-0164, Presented at SAE World Congress and Exhibition, Detroit, MI, April 2008.

Project Experience

Designed a sled test fixture and testing protocol for a motorcycle that was used to study occupant trajectory during braking and braking-into–impact scenarios.