

## Jessica L. Ellis, P.E.

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### Professional Competencies:

Mechanical & Optical Engineer who investigates:

- Vehicular collisions and other incidents involving optics, lighting, physics, and mechanics of motion
- Tractor-trailer and heavy truck accidents
- Pedestrian and bicycle accidents
- Human vision, lighting, conspicuity and visibility
- Slip, trip and fall incidents

Product Design Engineer with expertise in:

- Mechanical and optical product design
- Project and regulatory management
- Simulation and analysis
- Validation and materials selection

Experience Summary

- Automotive lighting design
- Project and regulatory management
- Research and management of optics projects

### Employment History:

#### **Wolf Technical Services, Inc., Indianapolis, IN**

Mechanical and Optical Engineer, Accident Reconstructionist (July 2015 to Present)

- Expert analysis of automotive collisions, pedestrian strikes, railroad grade crossing collisions, and other incidents involving optics, lighting, physics, and mechanics of motion. Strong emphasis on human vision, lines-of sight, lighting, visibility under the influence of glare, darkness, fog, etc., stereoscopic depth perception, and other vision issues. Experienced in the use of computer models and field measurement techniques that enable the direct measurement of headlamp (or other light source) intensity at any point in the forward field, and its application to the quantification of scene brightness, contrast and human visibility. These pioneering techniques work with the actual light source in question and support the quantification of visibility parameters while the light, the observer and the hazard are in relative motion.





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- Supporting product design in the areas of project management, quality, regulatory management, simulation and analysis, validation and materials selection. Project lead for US ARMY TARDEC project “Back Extraction Blast Seat”. Integral part of the project team for the US Navy’s aircrew restraint, the Self-Adjusting Tether System and lead engineer on the US Air Force’s Daylight Glare Reduction using a Light-field Camera project.

### **Valeo, Seymour, Indiana**

Optical Engineer (June 2011 – July 2015)

Designed optical systems for exterior automotive lighting applications for the consumer market. Supported each system through the full product development cycle, from conception to production. Represented regulatory affairs within the company, providing support to all program teams in the North American market.

### **Center for Applied Optics Studies, Terre Haute, Indiana**

Material Effects Team Supervisor (May 2009 – May 2011)

Supervised the day-to-day operation and maintenance of the Ultrashort pulse laser and lab, while providing support and guidance to a diverse group of undergraduate research students. Designed and engineered apparatuses for lab-related projects.

### **Center for Applied Optics Studies, Terre Haute, Indiana**

Ultrafast Laser Development Team (May 2007 – May 2009)

Conducted complex research at the Ultrashort Pulse Laser Laboratory in the rudimentary realm of material interactions with Ultrashort pulse lasers. Established the foundation for advancing the research into material effects resulting from such interactions.

### **Education:**

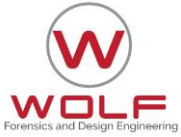
Rose Hulman Institute of Technology, Terre Haute, Indiana

2011

Master of Science Optical Engineering

Bachelor of Science Mechanical Engineering

Dean’s List Honor recipient



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**Continuing Education:**

- Human Factors in Traffic Crash Reconstruction, IPTM Feb 2024
- Northwestern University Traffic Crash Investigation 1 (80 hours) May 2022
- SAE Accident Reconstruction, the Autonomous Vehicle & Advanced Driver Assistance Systems (ADAS) April 2019
- SAE, Accessing and Interpreting Heavy Vehicle Event Data Recorders July 2018
- Crash Data Specialists, CDR Operators, Analysts & Applications Class June 2018
- Clearly Visible Optics, Lighting & Visibility for the Forensic Investigator Sept 2016
- OTARA Using EDR Delta-V to Determine Closing & Impact Speeds Nov 2015
- ATSSA Night Time Work Zone Lighting Nov 2015
- MATAI Fall Training Conference, Grandville, MI Oct 2015

**Computer Systems:**

Proficient in PC-based systems, particularly: C/C++, MATLAB, SolidWorks, TK Solver

**Licenses and Certifications:**

Professional Engineer, Kentucky License #34054

Professional Engineer, Indiana License #PE11800624

Bosch Certified Crash Data Retrieval (CDR) Technician

Bosch Certified Crash Data Retrieval (CDR) Analyst

**Patent Pending:**

System and Method for Controlling a Lighting and/or Signaling Device, WO2016018584 A1, PCT/US2015/039873

**Current and Past Memberships and Affiliations:**

Member of SAE International (Society of Automotive Engineers)

Member of OTARA (Ohio Traffic Accident Reconstruction Association)

Member of MATAI (Michigan Association of Traffic Accident Investigators)

Member of SAFE Association – Wright Brothers Chapter

Former Affiliate of the Society of Automotive Engineer (SAE) Lighting Committee

Science Olympiad Event Coordinator, Butler University

**Publications:**

Ellis, Jessica L. *Headlamps, Safety in Road Illumination* IMPACT The Journal of Traffic Accident Investigators Vol. 25 Fall 2016