FRANCIS J. FISH, Ph.D., MBA, EIT

Consulting Expert Witness — Automotive Safety, ADAS & Crashworthiness

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Security Clearance: US Government Secret Clearance & Document Secrecy Classification (2016, 2018)

EXECUTIVE SUMMARY & AREAS OF EXPERTISE

Doctoral trained Mechanical Engineer and executive program manager specializing in Advanced Driver Assistance Systems (ADAS), vehicle accident cost minimization modeling, structural dynamics, and manufacturing failure analysis. Over 14 years of combined experience across academic research, engineering, and industrial executive leadership.

Primary Expert Testimony & Litigation Disciplines:

- **Active Safety & ADAS Engineering:** Sensor performance, Autonomous Emergency Braking (AEB), Lane Keep Assist (LKA), connected vehicle signaling, and ADAS cost-effectiveness optimization.
- **Crash Kinematics & Accident Modeling:** Predictive accident behavior modeling, vehicle safety optimization, and structural crash response.
- **Manufacturing, Quality & Failure Analysis:** First-pass yield failure analysis, product design turnaround, root-cause defect analysis, and structural composites.
- **Nuclear & Mechanical Systems:** High-consequence safety systems, technical auditing, and complex maintenance compliance.

EDUCATION

- **Ph.D. in Mechanical Engineering** | Georgia Institute of Technology, 2021
  - *Specialty:* Design Optimization & Vehicle Safety
  - *Dissertation: Biologically Inspired Connected Advanced Driver Assistance Systems*
  - *Research Focus:* Safety economics, empirical studies, and optimization of Advanced Driver Assistance Systems (ADAS) in light-duty pickup trucks (Ford F-150 partnership).
- **M.S. in Mechanical Engineering** | Georgia Institute of Technology, 2020
- **Master of Business Administration (MBA)** — International Business | University of Delaware, 2017
- **B.S. in Mechanical Engineering** (Degree with Distinction) | University of Delaware, 2016

- *Thesis:* Universal Model Development of the Human Ankle Foot Region for Ply Pattern Generation to be Used in the Manufacturing of Passive Dynamic Ankle Foot Orthotics.

PROFESSIONAL LICENSURE, CERTIFICATIONS & TRAINING

- **Engineer in Training (EIT-5207)** — Delaware Association of Professional Engineers (2016)
- **Certified Lean Six Sigma Black Belt** — Six Sigma Academy Amsterdam (2024)
- **Certified Lean Six Sigma Green Belt** — Six Sigma Academy Amsterdam / US Government (2018, 2024)
- **Nuclear Engineering Certificate** — United States Navy Naval Sea Systems Command (2016)
- **Consulting Foundations Certificate** — LinkedIn Learning (2025)
- **Operations Management Professional Certificate** — Jack Welch Management Institute (2025)
- **Public Speaking Foundations Certificate** — Toastmasters International (2025)
- **Negotiation Professional Certificate** — American Negotiation Institute (2025)
- **Project Management Professional/Agile Certificates** — PMI, Microsoft, Atlassian, Aha (2025)

PROFESSIONAL EXPERIENCE

CEO & Chief Engineer | Mercuri Industries (2025 – Present)

- Oversee multi-disciplinary engineering technical evaluations, engineering design solutions, and advanced technology execution.

Senior Technical Program Manager | Kickr Design (2025 – Present)

- Direct complex hardware design programs, failure testing, and product development verification.

Senior Strategic Program & R&D Manager | Kimber America (2021 – 2025)

- Led a $50M state-of-the-art manufacturing facility launch and plant relocation execution.
- Directed root-cause quality investigations, improving first-pass yield by 2,500% and accelerating new product development cycles from 60 months down to 10 months.

Graduate Research & Teaching Assistant | Sustainable Design & Manufacturing Lab, Georgia Institute of Technology (2019 – 2021)

- Partnered directly with **Ford Motor Company** to optimize F-150 crash safety systems and ADAS performance.

- Developed mathematical and simulation models predicting vehicle accident dynamics, influencing IIHS pickup truck test parameters and establishing foundational research for the Ford–State Farm insurance partnership.

Nuclear Engineering Auditor & Nuclear Engineer | US Navy Naval Sea Systems Command (NAVSEA) (2016 – 2018)

- Planned the $5B+ half-life refueling overhaul for the CVN 75 (USS Harry S. Truman Aircraft Carrier), delivering the first public shipyard carrier overhaul on schedule in 30 years.
- Conducted rigorous nuclear engineering audits, system compliance reviews, and technical failure investigations.

Mechanical Engineer (Contract) | Mechanical Design & Forensic Analysis LLC (2016)

- Performed engineering analysis, dynamic modeling, and forensic evaluations for mechanical systems.

Composites Research Engineer & Assistant | University of Delaware Center for Composite Materials (DARPA, ARL, BMW) (2012 – 2016)

- Conducted materials testing, composite failure characterization, and finite element modeling for DARPA, the Army Research Lab (ARL), and BMW.

ACADEMIC APPOINTMENTS & TEACHING EXPERIENCE

- **Adjunct Professor (Business and Physics)** | Troy University (2023 – Present)
  - *Courses:* Physical Science Laboratory; Earth, Space & Science Lab; Project Management.
- **Instructor of Record & Teaching Assistant** | Georgia Institute of Technology (2019 – 2021)
  - *Instructor of Record:* Statics.
  - *Teaching Assistant:* Deformable Bodies, Capstone Senior Design, Experimental Methods Laboratory.
- **Affiliate Research Faculty** | James Madison University (2018 – 2019)
- **Teaching Assistant & Grader** | University of Delaware (2015 – 2016)
  - *Courses:* Machine Design I & II, Materials Engineering, Computer-Aided Design.

PATENTS & PROPRIETARY INTELLECTUAL PROPERTY

1. Fish, F. and Bras, B., **"Systems and Methods for Vehicle Signaling and Bargaining,"** United States Patent US-2025-0170955-A1, Issued May 29, 2025.
2. Fish, F. and Bras, B., **"Biologically Inspired Connected Advanced Driver Assistance Systems (BICADAS),"** United States Patent Disclosure / Application, 2022.

PEER-REVIEWED PUBLICATIONS & TECHNICAL WRITINGS

Automotive ADAS & Safety Economics Publications

1. **Fish, F.** and Bras, B., "Sustainable Design of Advanced Driver Assistance Systems Based on Optimization and Empirical Studies on Full-Size Light-Duty Pickup Trucks," *Procedia CIRP*, vol. 105, pp. 67-72, 2022.
2. **Fish, F.** and Bras, B., "A Brief of the Economics of ADAS for Full Size Light Duty Pickup Trucks: Relating Effectiveness to Cost," *Journal of Autonomous Vehicles and Systems*, Technical Brief, 2021.
3. **Fish, F.** and Bras, B., "Minimizing the Cost of Automotive Accidents by Optimizing the Design of Advanced Driver Assist Systems," *ASME International Design Engineering Technical Conferences (IDETC)*, 2021.

Engineering Design, AI, & Government Research

4. **Fish, F. J.**, "A Brief Overview of the Pros and Cons of AI in Engineering Design," *ASEE Annual Conference and Exposition*, Tampa, FL, 2019.
5. **Fish, F. J.**, et al., "Exploring Differences in Senior and Sophomore Engineering Students' Mental Models of Common Products," *ASEE Annual Conference and Exposition*, 2019.
6. Rhodes, T., **Fish, F.**, Classified Government Technical Document, Department of Defense, May 2018.
7. **Fish, F. J.**, et al., Classified Government Technical Document, Department of Defense, December 2017.
8. Dapper, C. and **Fish, F.**, Classified Government Technical Document, Department of Defense, September 2017.

Materials, Biomechanics & Software Development

9. **Fish, F.**, Gillespie, J. W., Jr., and Yarlagadda, S., "Universal Model Development of the Human Ankle Foot Region for Ply Pattern Generation for the Manufacturing of Passive Dynamic Ankle Foot Orthotics," *SAMPE*, 2016.
10. **Fish, F.**, Scott, C., Tierney, J., Gillespie, J. W., Jr., and Yarlagadda, S., "Flexible Tooling System for the Manufacturing of a Passive Dynamic Ankle Foot Orthosis," *SAMPE*, 2015.
11. **Fish, F.** and Brown, D., "Student Perceived Efficacy of an Adult Initiated Social Networking Intervention," *AACE E-Learn*, 2011.

HONORS, AWARDS & PROFESSIONAL LEADERSHIP

- **1st Place Graduate Division Student Essay Winner** — American Society for Engineering Education (ASEE) (2019)
- **Charles T. Main Finalist & Honorarium Recipient** — American Society of Mechanical Engineers (ASME) (2016)

- **Delaware Section Outstanding Engineering Student** — ASME / Society of Mechanical Engineers (2015, 2016)
- **4th Place National Old Guard Oral Competition** — ASME (2016)
- **Chairperson Award for Outstanding Student Leadership** — University of Delaware ME Dept (2015)
- **Senior Design Faculty Choice Award** — University of Delaware ME Dept (2015)
- **ASME Regional Student Chair & UD Chapter President** — Rebuilt membership from 5 to 220+ active engineering members (2014 – 2016)
- **Provost Search Committee & Graduate Senate Chair** — Georgia Institute of Technology (2019 – 2021)

MANDATORY FRCP RULE 26 DISCLOSURES

1. Prior Expert Testimony History (Last 4 Years)

Pursuant to Federal Rule of Civil Procedure 26(a)(2)(B)(v), an expert must list all cases in which they have testified as an expert at trial or by deposition within the preceding 4 years.

Case Caption	Case / Docket No.	Jurisdiction	Retaining Party / Firm	Testimony Date & Type
No deposition or trial testimony provided in the preceding 4 years.	N/A	N/A	N/A	None to Date