# Patrick M. Fay

MS

Senior Technologist

Mr. Patrick Fay holds a Master of Science degree in Media Forensics from the University of Colorado Denver and has worked in the fields of accident investigation, forensic video analysis, and computer graphics since 1999. Over the past 25 years, he has developed deep technical expertise in sUAS (drone) operations, LiDAR scanning, photogrammetry, 3D modeling and animation, and vehicle crash data collection. He has conducted detailed site surveys and processed electronic data from security systems, vehicles, and locomotives, frequently working with diverse video formats to analyze timing, position, speed, control inputs, and horn usage in rail and roadway incidents.

Mr. Fay specializes in railroad and heavy truck accident investigation, simulation, evidence collection, and the scientific analysis and authentication of digital evidence. His combined background in computing, digital imaging, media forensics, and real-world investigation enables him to deliver precise visualizations for forensic and legal applications.

## Education

M.S. Media Forensics, University of Colorado Denver. May 2026

B.S. Computer Science, Minor in Mathematics. Colorado State University. 1991

## Licenses & Certifications

- Level 1 sUAS Application Certified Thermographer, April 2024
- PROPS Certified Pilot, In-person flight mastery training and Aerial Accident Reconstruction, September 2023

## Positions Held

**Engineering Systems Inc., Aurora, Illinois**

- Senior Technologist, 2022 – Present

**Fay Scientific & Media, Thornton, Colorado**

- Principal, 2020 – 2022

**Fay Engineering Corporation, Denver, Colorado**

- Director of Graphics, 1999 – 2019


**Contact Information**

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**ESi Denver**

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**Areas of Specialization**

- sUAS (Drone) Site Mapping
- sUAS Structural Inspections
- sUAS Thermography
- LiDAR Scanning
- Aerial Photography and Videography
- Heavy Vehicle Black Box Imaging
- Automobile Airbag Module Imaging
- Vehicle Inspections
- 3D Animation & Simulation
- 3D Human Motion Capture
- Railroad Accident Investigation
- Heavy Truck Accident Investigation

**Sykes, Boulder, Colorado**

- Research and Development Manager, 1997 – 1998
- Software Localization Manager, 1995 – 1997
- Software Localization Engineer, 1994 – 1995

**Decisioneering, Inc., Denver, Colorado**

- Programmer/Analyst, 1991 – 1994

## Continuing Educations

- **FARO Laser Scanner Operator (Two-Day)** – FARO Technologies, April 2022
- **Derailment Investigation & Prevention Seminar** – Wolf Railway Consulting, November 2019
- **Accessing and Interpreting Heavy Vehicle Event Data Records** – SAE International, LLC, 2018
- **nData TrialDetector 6 Certified Trainer Program** – Gilbert, Arizona 2013
- **At-Scene Crash Investigation Correspondence Course** – IPTM, University of North Florida, 2013

## Professional Affiliations/Honors

**Society of Automotive Engineers (SAE)**

**American Association of Forensic Scientists (AAFS)**

**National Association of Professional Accident Reconstruction Specialists (NAPARS)**

## Publications

“Artifacts in Stitched Panoramas from Sequential Movie Frames.” **P. Fay**, Master’s thesis, University of Colorado, Denver, CO, 2026

“Reconstructing and Evaluating a Workplace Fatality Using Human Motion Capture 08DHM-0029,” R. Fay, **P. Fay**, Human Digital Modeling Conference, Pittsburgh, PA, 2008.

“PC-Crash and HVE, an Overview of Similarities and Differences,” **P. Fay**, SAE Conference, Detroit, MI, 2001.

## Presentations

"Using the "Kitchen Table Model" to Understand How Computer Graphics Are Made," **P. Fay,** 29th Railroad Annual Liability Conference, Chattanooga, TN, 2024

"EDR Extraction from Vehicles Involved in Grade Crossing Accidents**,"** M. Morningstar, **P. Fay**, J. Hinkle, 27th Railroad Annual Liability Conference, St. Louis, MO, 2022.

"A Lawyer's Guide to Understanding Computer Graphics," **P. Fay**, NARTC Special Litigation Conference XXVII, Beaver Creek Ski Resort, CO, 2018.

**"**A Graphic Look at the Helmink Case," P. Nadia, **P. Fay**, NARTC, 2018.

"Fact or Fiction: Debunking a Scientific Hoax," **P. Fay,** J. McKay, ASLRRA Liability Conference, 2018

"Taking the Next Step: Applying Human Motion Capture from Accident Reconstruction to Ergonomics," R. Fay, **P. Fay**, Annual Applied Ergonomics Conference, Nashville, TN, 2015

"Synchronized Data Streams in Accident Investigations," **P. Fay**, RMASIU (Rocky Mountain Association of Special Investigative Units) Monthly Training Meeting, Centennial, CO, 2014.

"Introduction to Motion Capture (MOCAP)," **P. Fay**, The 17th Annual RMASIU (Rocky Mountain Association of Special Investigative Units) Seminar and Expo on Insurance Fraud, Centennial, CO, 2013.

"Integrated 3D Human Motion Analysis for Workplace Assessment," **P. Fay**, J. Broker, R. Weinberger, 14th Annual Applied Ergonomics Conference, Orlando, FL 2011.

"High Impact Safety Training with Realistic Computer Graphics," R. Fay, **P. Fay**, ASSE Professional Development Conference, 2003.

"Visualizing the Use of Accident Reconstruction Tools, Software, and Technology in Highway Design and Safety," **P. Fay,** Transportation Research Board Conference, Snowbird, UT, 2002.

"Using Motion Layers to Analyze Pre-Accident Timelines," **P. Fay,** HVE Forum, San Diego, CA 2002.

"Keeping an Eye on Things," **P. Fay,** Popular Home Automation, 1999