Nicholas E. Civitanova
Senior Staff Consultant

Mr. Nicholas Civitanova is a Mechanical Engineer and a Senior Staff Consultant for Engineering Systems Inc (ESi) in the Aurora, Illinois, office. He has a Bachelor of Science in Mechanical Engineering from Purdue University in West Lafayette, Indiana.

Mr. Civitanova specializes in accident investigation and reconstruction of recreational, passenger, and commercial vehicles, with expertise in impact analysis, vehicle dynamics, instrumentation, data acquisition and analysis, and three-dimensional laser scanning. Mr. Civitanova has experience with biomechanical instrumentation, incorporating the use of motion capture technologies to measure and visualize biological motion.

Education

BS, Mechanical Engineering. Purdue University. 2022

Licenses & Certifications

- Recon-3D Certification, 2023
- FARO Focus 3D Operator Certification, 2023

Positions Held

Engineering Systems Inc., Aurora, Illinois

- Senior Staff Consultant – 2025-present
- Staff Consultant, 2023–2025

Engineering Systems Inc., Ann Arbor, Michigan

- Engineering Intern, 2021–2022

Continuing Education

- **Hyundai-Kia & Tesla EDR Tools Technician** - University of North Florida Institute for Police Technology and Management (IPTM), Aurora, IL, 2025
- **Passenger Restraint Safety Systems** - University of North Florida Institute for Police Technology and Management (IPTM), Aurora, IL, 2025

Contact Information

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(630) 851-2701

ESi Aurora

4215 Campus Drive
Aurora, IL 60504

Areas of Specialization

- Accident Investigation & Reconstruction
- Vehicle Dynamics Analysis & Simulation
- Data Collection
- Vehicle Systems Analysis

- **Applying Automotive EDR Data to Traffic Crash Reconstruction** – Society of Automotive Engineers, 2025
- **The Fundamentals of Vehicle Dynamics** – Society of Automotive Engineers, 2025
- **Driver Distraction from Electronic Devices: Insights and Implications** – Society of Automotive Engineers, 2025
- **Traffic Crash Reconstruction for Engineers** – Northwestern University Center for Public Safety, 2024
- **Simulation Basics Training** – Virtual CRASH, 2023
- **Interface Training** – Virtual CRASH, 2023
- **Event Data Recorder Update and Analysis** – Ruth Consulting, 2023
- **CDR Tool Technician Training** – Bosch, 2023

Professional Affiliations/Honors

Society of Automotive Engineers

- Member, 2023 – Present

American Society of Mechanical Engineers

- Member, 2023 – Present

Project Experience

Investigations

Vehicle Impact Analysis – Vehicle to Vehicle

- Performed inspection of the site and involved vehicles and captured data in the forms of photographs, videos, three-dimensional laser scan data, and event data recorder information.
- Analyzed the vehicle collision to determine area of impact and orientation at impact.
- Performed a momentum analysis to determine speed at impact and energy of the impact.
- Performed a time-distance analysis to determine the coordinated motion of each vehicle.
- Analyzed available avoidance of each vehicle under specific conditions.

Vehicle Impact Analysis – Vehicle to Pedestrian

- Performed inspection of the site and involved vehicles and captured data in the forms of photographs, videos, three-dimensional laser scan data, and event data recorder information.
- Analyzed the vehicle and pedestrian's post-impact motion to determine impact location
- Performed a momentum analysis to determine the vehicle's speed at impact.

<u>Vehicle Dynamics Simulation</u>

- Modelled vehicle motion using physical principles and 3D dynamics simulation software.

- Applied known vehicle capabilities to determine speed, position, and/or maneuverability.

- Produced visuals to illustrate the general motion of the vehicle.

Publications

"Sensitivity Analysis of Virtual Crash Simulation Software Using Design of Experiments (DOE)," J. Roberts, **N. Civitanova**, J. Stegemann, D. Buzdygon, and K. Thobe, SAE Technical Paper 2025-01-8693, 2025.

"Inclusion of Tire Forces into Low-Speed Bumper-to-Bumper Crash Reconstruction Simulation Models," M. Brach, J. Stegemann, E.J. Manuel, and **N. Civitanova**, SAE Technical Paper 2024-01-2479, 2024.

Presentations

"Sensitivity Analysis of Virtual Crash Simulation Software Using Design of Experiments (DOE)," **N. Civitanova**, D. Buzdygon, SAE WCX, Detroit, MI, April 8–10, 2025.

"Inclusion of Tire Forces into Low-Speed Bumper-to-Bumper Crash Reconstruction Simulation Models," **N. Civitanova**, J. Stegemann, SAE WCX, Detroit, MI, April 16–18, 2024.