Kenneth Conuel V. Oralde, MS

Staff Consultant

Kenneth Conuel Oralde is a Staff Consultant with Engineering Systems Inc. (ESi) in the Ann Arbor, Michigan office. He holds degrees in Mechanical Engineering and Bioengineering and specializes in the application of engineering principles to accident reconstruction, biomechanics, and injury analysis.

Mr. Oralde investigates and reconstructs collisions involving passenger, commercial, and recreational vehicles, applying principles of vehicle dynamics, occupant kinematics, and biomechanics to evaluate collision severity and human response. His experience includes vehicle inspections, scene documentation, data acquisition, mechanical testing, and engineering analyses supporting litigation.

His biomechanics background includes extensive experience in human motion analysis using optical motion capture, wearable inertial sensors (IMUs), electromyography (EMG), ultrasound, and other biomechanical instrumentation. This combination of automotive engineering and biomechanics enables him to evaluate the interaction between vehicle motion, occupant movement, injury mechanisms, and human performance in transportation-related and other mechanical incidents.

Education

MSE, Bioengineering. University of Michigan-Dearborn. 2026

BSE, Mechanical Engineering. University of Michigan-Dearborn. 2025

BSE, Bioengineering. University of Michigan-Dearborn. 2025

Positions Held

Engineering Systems Inc., Ann Arbor, Michigan

- Staff Consultant, 2026-Present
- Engineering Intern, 2025-2026

Contact Information

kvoralde@engsys.com

(734) 794-8100

ESi

1174 Oak Valley Drive
Ann Arbor, MI 48108

Areas of Specialization

- Accident Investigation & Reconstruction
- Data Acquisition & Data Analysis
- Mechanical & Biomechanical Testing
- Mechanical Design

University of Michigan, Dearborn, Michigan

- Biodynamics Laboratory Research Assistant, 2022-2026
- Graduate Student Instructor (Statics & Mechanics of Materials), 2026
- Mechanical Engineering & Bioengineering Tutor, 2024-2025

Continuing Education

- **Accident Reconstruction** – Wayne State University, Detroit, MI, 2025; hybrid course of Northwestern University's Traffic Crash Investigation I, Traffic Crash Reconstruction I, and Traffic Crash Reconstruction II.

Project Experience

Accident Investigation and Reconstruction

- Assisted in vehicle and site inspections including documentation through photographs, field data collection, and three-dimensional laser scanning.
- Analyzed EDR data and scene data to simulate general vehicle motion with 3D vehicle dynamics software.

Data Analysis and Simulations

- Collected experimental data using instrumentation systems and data analysis software for product failure testing and biomechanical analyses.
- Collected and interpreted sensor data to evaluate motion, loading, and system response.
- Developed static and dynamic demonstratives and figures to communicate findings in technical reports.

Biomechanical Testing and Data Collection

- Utilized inertial motion capture systems and accelerometers to quantify human motion and kinematic response.
- Designed and executed human surrogate testing protocols to obtain biomechanical data for accident investigation purposes.
- Collected motion capture data on-site to support reconstruction analyses and visualizations.

Professional Affiliations/Honors

Society of Automotive Engineers

- Member

Biomedical Engineering Society

- Member

Tau Beta Pi, Engineering Honor Society

- Member

Publications

"Effects of Knowledge-Translation Anterior Cruciate Ligament Injury Prevention Program on Movement Performance in Youth Female Soccer Players: A Preliminary Prospective Study," T.C. Liao, W.H. Suits, R.M. Arriola, N. Fraaza, J. Hyun, **K.C.V. Oralde**, and A.O. Esquivel, Journal of Sports and Rehabilitation Sciences, 10.32598/JSRS.2501.1052.

Presentations

"Sex and Awareness Effects of Head-Neck Kinematics During a Simulated Curb Strike," **K.C.V. Oralde**, I. Fakih, A.O. Esquivel, Injury Prevention Research Symposium, Ann Arbor, MI, March 23, 2026.

"Ultrasound Assessment of Quadriceps Strain and Knee Kinematics Across Squat Tempos in Women," **K.C.V. Oralde,** R.M. Arriola, I. Fakih, C. Cooley, I. Ayyar, S. Lagerveld, A.O. Esquivel, Biomedical Engineering Society 2025 Annual Meeting, San Diego, CA, October 10, 2025.

"Reliability of Wearable Sensors to Measure Knee Angles During an ACL-IPP Screening Test," **K.C.V. Oralde**, R.M. Arriola, M. Williams, W.H. Suits, J. Liao, A.O. Esquivel, Biomedical Engineering Society 2024 Annual Meeting, Baltimore, MD, October 26, 2024.