# Daniel Hall

PhD

Staff Consultant

Dr. Daniel Hall is a biomechanical engineer with a background in human biodynamics, impact kinematics, and computational modelling of human responses to collisions. His research focuses on investigating how variations in collision conditions influence human motion, contact mechanisms, and potential injury outcomes.

Dr. Hall earned his Ph.D. in Biomechanical Engineering from Trinity College Dublin, where his research focused on pedestrian collisions with subway trains and trams. He developed multibody computational models using MADYMO to investigate pedestrian motion and contact mechanisms across a wide range of impact scenarios. By systematically varying factors such as impact velocity, pedestrian posture, impact position, and environmental geometry, his research examined the influence of collision conditions on pedestrian kinematics and the likelihood of contact with vehicle structures and surrounding infrastructure. His work also incorporated real-world collision data and experimental testing to investigate injury mechanisms and evaluate potential safety countermeasures.

Dr. Hall subsequently conducted postdoctoral research at the University of Virginia's Center for Applied Biomechanics, where his work included the investigation of occupant responses in rear-impact collisions and the application of computational methods to biomechanical data analysis.

His technical interests include the application of human biodynamics and computational modelling to collision investigations, particularly the evaluation of plausible human motion and contact mechanisms under varying impact conditions.

## Education

PhD, Biomechanical Engineering. Trinity College Dublin - Dublin, Ireland.

BSc, Mechanical Engineering. Trinity College Dublin - Dublin, Ireland.


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**Areas of Specialization**

- Pedestrian-Tram Interactions
- Impact Biomechanics
- Hybrid III ATD Testing
- Accident Scenario Analysis
- Epidemiological Data Analysis
- Technical Reporting & Presentation
- Multibody Simulation and Contact Modeling (MADYMO)
- Data Analysis, Statistical Analysis, and Visualization (MATLAB)

## Positions Held

**Engineering Systems Inc., Houston, Texas**

- Staff Consultant, 2026 – Present

**University Of Virginia**

- Postdoctoral Research Associate, 2025 – 2026

**Trinity College Dublin**

- PhD Researcher, 2021-2025
- Teaching Assistant for 4B17 Multibody Dynamics 2023-2025
- Teaching Assistant for 3B5 Mechanics of Machines 2021-2025

**The Association for the Advancement of Automotive Medicine (AAAM)**

- Marketing Committee Member, 2022–2023

## Professional Affiliations/Honors

- Laidlaw Undergraduate Research and Leadership Scholarship - 2019-2021
- Trinity College Dublin Teaching Excellence Award - 2024

## Publications

"Detailed analysis of New York City Subway pedestrian incidents from 2019", **Hall, D**., Linogao, J., Zentz, L., Shaw, G., Lamb, T. and Simms, C., 2023. Transportation research record, 2677(11), pp.642-650.

"Drainage Troughs as a Protective Measure in Subway–Pedestrian Collisions: A Multibody Model Evaluation," **Hall, D**., Gildea, K. and Simms, C., 2024. Applied Sciences, 14(22), p.10738.

"Energy-Absorbing Countermeasures for Subway-to-Pedestrian Collisions: A Combined Experimental and Multibody Modelling Approach," **Hall, D**., Zentz, L., Lynch, P. and Simms, C., 2025. Applied Sciences, 15(11), p.6219.

"Configurations of underreported cyclist-motorized vehicle and single cyclist collisions: Analysis of a self reported survey," Gildea, K., **Hall, D**. and Simms, C., 2021Accident Analysis & Prevention, 159, p.106264.

"Forward dynamics computational modelling of a cyclist fall with the inclusion of protective response using deep learning-based human pose estimation," Gildea, K., **Hall, D**., Cherry, C.R. and Simms, C., 2024. Journal of biomechanics, 163, p.111959.

"Computer vision-based assessment of cyclist-tram track interactions for predictive modeling of crossing success," Gildea, K., **Hall, D**., Mercadal-Baudart, C., Caulfield, B. and Simms, C., 2023. Journal of safety research, 87, pp.202-216.

“Wheel Contact in Subway Collisions: Impact Testing of a Wheel-guard Countermeasure for Amputations, Transections and Decapitations,” **Hall, D**., Spears, J., Morgan, N. And Shaw, G., 2026. IRCOBI Conference 2026, IRC-26-101

“Automatic Creation of Synthetic Finite Element Seats Using Statistical Models,” Cemborain, P., **Hall, D**., Donlon, J., Mehta, A., Gepner, B., Caudilo-Huerta, A., Parez, D., Edwards, M., Jermakian, J., Forman, J. 2026. IRCOBI Conference 2026, IRC-26-10