ALIREZA HASHEMIAN

MS

720.910.7807
ahashemian@explico.com

Traffic Accident Reconstruction | Visualization

Professional Profile

Mr. Alireza Hashemian is a Managing Accident Reconstructionist at Explico. During his two years of graduate study, Mr. Hashemian conducted research in the area of vehicle dynamics and stability. Mathematical modeling of instabilities in articulated vehicles, unstable due to mass distribution, and analyzing the physics of vehicle rollover through mathematical modeling and examination of empirical data from rollovers. Research in the areas of heat transfer and thermal science including design and construction of an evaporative cooler while utilizing misting nozzles and high-pressure pumps to improve the efficiency of cooling. Computer programming to obtain temperature distribution for Finite 2D elements. Designed, built, and programed a robotic arm with five degrees of freedom.

Animating for television commercials using three-dimensional modeling, animation, rendering, lighting, camera tracking and editing Computer simulation, animation, photogrammetry, and video analysis to investigate and analyze accidents. Mr. Hashemian is responsible for the “Photogrammetry and Analysis of Digital Media” course instruction and curriculum development, which is sponsored by the Society of Automotive Engineers. The content of this ACTAR accredited course includes photogrammetry, video analysis, video tracking, and digital media analysis.

Education

UNIVERSITY OF COLORADO - DENVER

MS	Mechanical Engineering	**2011**
BS	Mechanical Engineering	**2009**

Licenses & Certifications

Traffic Accident Reconstructionist, Accreditation Commission for Traffic Accident Reconstruction (ACTAR #3397)

Remote Pilot, Small Unmanned Aircraft System Rating, Federal Aviation Administration (FAA), July 2017

LEVA Certified Forensic Video Technician, University of Indianapolis, July 2015

Affiliations

SAE International

American Society of Mechanical Engineers

Tau Beta Pi - The Engineering Honor Society

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MS

Areas of Expertise

Forensic Animation
Accident Reconstruction
3D Modeling
Computer Simulation
Photogrammetry
Video Analysis
Digital Image Processing
3D Visualization

Experience

Explico

2022 - Present *Managing Accident Reconstructionist*

J.S. Held, LLC

2021 - 2022 *Senior Visualization Analyst / Engineer*

Kineticorp, LLC

2017 - 2021 *Department of Engineering - Accident Reconstructionist*

2010 - 2021 *Department of Visualization - Forensic Animator*

Lilihan

2006 - 2010 *Web Designer / Developer and Graphic Designer*

The Design Firm

2003 *3D Animator*

Tasvir Vijeh

2000 - 2002 *3D Animator*

Awards and Honors

Outstanding Academic Achievement, School of Engineering and Applied Science, CU Denver, 2009

Outstanding Graduating Senior, Department of Mechanical Engineering, University of Colorado Denver, 2009

William R. Simmons Scholarship Awards, Fall 2009

William R. Simmons Scholarship Awards, Fall 2008

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MS

TECHNICAL, PEER-REVIEWED PUBLICATIONS

Barreiro, E., Carter, N., and Hashemian, A., "Validating the Sun System in Blender for Recreating Shadows," SAE Technical Paper 2024-01-2476, 2024, https://doi.org/10.4271/2024-01-2476.

Hashemian, A., and Terpstra, T., "Accuracy of Rectifying Oblique Images to Planar and Non-Planar Surfaces," SAE Technical Paper 2024-01-2481, 2024, https://doi.org/10.4271/2024-01-2481.

Terpstra, T., Mckelvey, N., King, E., Hashemian, A., King, C., “Aerial Photoscanning with Ground Control Points from USGS LiDAR.” SAE, Paper 2022-01-0833. (2022).

Mckelvey, N., King, C., Terpstra, T., Hasehmian, A., Mitchell, S., “Accuracy of Aerial Photoscanning with Real-Time Kinematic Technology.” SAE, Paper 2022-01-0830. (2022).

Miller, S., Hashemian, A., Gillihan, R., and Helms, E., “A Comparison of Mobile Phone LiDAR Capture and Established Ground based 3D Scanning Methodologies,” SAE, Paper 2022-01-0832. (2022).

Terpstra, T., Owens, T., Hashemian, A., Voitel, T., “Depth Mapping Accuracy Evaluation of the Microsoft Kinect v2 Motion Capture Sensor,” Journal of the Association for Crime Scene Reconstruction (2021) 25:1-10.

Terpstra, T., Hashemian, A., “Photogrammetry and Analysis of Digital Media,” Version: 005, Published through SAE Technical Course Material, Troy, Michigan. (2021).

Beauchamp, G., Pentecost, D., Koch D., Hashemian, A., et al., “Speed Analysis from Video: A Method for Determining a Range in the Calculations,” SAE Technical Paper 2021-01-0887. (2021).

Terpstra, T., Neale, W.T.C., King, E., Hashemian, A., Hessel, D., “Determining Range of Certainty in Photogrammetry and Videogrammetry.” Proceedings of the American Academy of Forensic Sciences, 73rd Annual Scientific Meeting, Held Virtually. 2021. C21.

Marr, J., Neale, W., Beier, S., Hashemian, A., Mckelvey, N., “Calibrating Digital Imagery in Limited Time Conditions of Dawn and Dusk and Twilight,” SAE Paper 2021-01-0855. (2021).

Terpstra, T., Hashemian, A., Gillihan, R., King, E., Miller, S., Neale, W.T.C., “Accuracies in Single Image Camera Matching Photogrammetry.” SAE, Paper 2021-01-0888. (2021).

Terpstra, T., Hashemian, A., Voitel, T., Priest, J. “A Comparison of Metrology Used in Documenting Shooting Incident Trajectories,” Journal of the Association for Crime Scene Reconstruction (2020) 24:23-42.

Terpstra, T., Neale, W., Hashemian, A., “Photogrammetry and Analysis of Digital Media,” Version: 004, Published through SAE Technical Course Material, Troy, Michigan. (2019).

Carter, Neal, Hashemian, Alireza, Mckelvey, Nathan, “An Optimization of Small Unmanned Aerial System (sUAS) Image Based Scanning Techniques for Mapping Accident Sites,” SAE Technical Paper 2019-01-0427, 2019.

Terpstra, T., Neale, W., Hashemian, A., “Photogrammetry and Analysis of Digital Media,” Version: 003, Published through SAE Technical Course Material, Troy, Michigan. (2019).

Terpstra, T., Dickinson, J., Hashemian, A., Fenton, S., “Reconstruction of 3D Accident Sites Using USGS LiDAR, Aerial Images, and Photogrammetry.” SAE, Paper 2019-01-0423. Detroit, MI. (2019).

Terpstra, T., Neale, W., Hashemian, A., “Photogrammetry and Analysis of Digital Media,” Version: 002, Published through SAE Technical Course Material, Troy, Michigan. (2018).

Terpstra, T., Dickinson, J., Hashemian, A., “Using Multiple Photographs and USGS LiDAR to Improve Photogrammetric Accuracy.” SAE, Paper 2018-01-0516. Detroit, MI. (2018). — Also published in SAE International Journal of Transportation of Transportation Safety Volume 6, Issue 3, 2018.

Terpstra, T., Neale, W., Hashemian, A., “Photogrammetry and Analysis of Digital Media,” Published through SAE Technical Course Material, Troy, Michigan. (2017).

Rose, Nathan A., Carter, Neal., Pentecost, David., Hashemian, Alireza, “Video Analysis of Motorcycle and Rider Dynamics During High Side Falls,” SAE, Paper 2017-01-1413.

Terpstra, Toby, Miller, Seth, Hashemian, Alireza, “An Evaluation of Two Methodologies for Lens Distortion Removal When EXIF Data is Unavailable.” SAE, Paper 2017-01-1422.

Terpstra, T., Voitel, T., Hashemian, A., “A Survey of Multi-View Photogrammetry Software for Documenting Vehicle Crush.” SAE, Paper 2016-01-1475.

Carter, Neal, Hashemian, Alireza, Rose, Nathan A., and Neale, William T.C., “Evaluation of the Accuracy of Image Based Scanning as a Basis for Photogrammetric Reconstruction of Physical Evidence,” SAE Paper 2016-01-1467.

Books and Chapters

Rose, Nathan A., Neal Carter, David Pentecost, Alireza Hashemian, “Video Analysis of Motorcycle and Rider Dynamics During High-Side Falls,” Chapter 13 in Collision Reconstruction Methodologies Volume 4: Motorcycle Accident Reconstruction, Edited by Chris Armstrong, PT-186_4, SAE International, 2019.

HASHEMIAN

MS

PROFESSIONAL DEVELOPMENT

University of Denver, CO.

"Computer Vision" — January 2017-March 2017

Society of Automotive Engineers

"Vehicle Crash Reconstruction Methods," Scottsdale, AZ — September 28-30, 2016

"Reconstruction and Analysis of Rollover Crashes of Light Vehicles," Scottsdale, AZ — September 27, 2016

Northwestern University Center for Public Safety

"Crash Investigation II" — December 2014

Spar International

3D Technology Integration, Hardware-Software, Colorado Springs, CO — April 2014

3D Visualization and Animation for Court Cases, Colorado Springs, CO — April 2013

Illuminating Engineering Society of North America

Fundamental of Lighting — May 2013

Arapahoe Community College

Computer Aided Drafting Certificate, Colorado — 2004