



CURRICULUM VITAE
Daniel Simacek

SPECIALIZATION

- Accident Reconstruction
- Computer Simulation (PC-Crash)
- Crash Data Recorder (CDR/EDR)
- Rollover Analysis
- Computer Animation and Modeling
- Visual Effects Compositing
- Forensic Video Analysis
- Visibility Studies

EDUCATION

- Bachelor of Computer Science & Mechanical Engineering
CVUT- Technical University of Prague (1999)

CERTIFICATIONS

- CDR– Technician
- SAE – Photogrammetry and Analysis of Digital Media
- LEVA – Forensic Video Technician

ADDITIONAL TRAINING

- LEVA Level 2: Digital Multimedia Evidence Processing, August 2019
- CAARS 2019 2nd Quarter Training, June 2019
- LEVA Level 1, Forensic Video Analysis & the Law, June 2019
- CAARS 2018 1st Quarter Training, January 2018
- SAE – Photogrammetry and Analysis of Digital Media, December 2017
- NUKE VFX Compositing Course, 2015 and 2016
- Pluralsight, Camera Tracking, and Multi-Channel Compositing, March 2016
- NUKE, Depth-Based Compositing, March 2016
- FARO Academy Forensic Workshop, November 2016
- PC-Crash Advance Training Course, January 2012
- PC-Crash Training Course, September 2007

PROFESSIONAL EXPERIENCE

2012 to present

MOMENTUM ENGINEERING CORP.

Senior Forensic Engineer / Senior Graphic Designer

Accident reconstruction, including heavy trucks, automobiles, motorcycles, bicycles, and pedestrian accidents. State-of-the-art computer simulation. Engineering services, including vehicle and site inspections, re-enactments, visibility studies, traffic signal analysis, vehicle dynamics, rollover dynamics, crash testing, mechanical failure analysis, and design evaluation.

2007 to 2012

FIELD AND TEST ENGINEERING

Forensic Engineer / Senior Graphic Designer

Work with senior engineers on accident investigation and reconstruction of automobile, bicycle, motorcycle, and pedestrian collisions. Engineering services including human factors, road design, utilizing laser measurement, digital photography and video, measurement. Visibility studies, traffic signal analysis, vehicle dynamics, rollover dynamics. Extensive use of computer-based analysis and simulation (PC-Crash), as well as momentum and energy-based equations.

TECHNICAL BACKGROUND

Accident Reconstruction:

Conducted over 450+ accident reconstructions, including vehicle inspections, site inspections, Leica laser surveys, and advanced computer simulations. Expertise in several cutting-edge reconstruction techniques including 3D computer animations, PC-Crash accident reconstruction program, and HDS laser surveys. Reconstruction of automobile, heavy truck, bus, bicycle, motorcycle, and pedestrian accidents. Scene investigation and drawings, skid/crush analysis, photography, vehicle inspection, damage analysis, vehicle dynamics, loss of control, and human factors associated with accident reconstruction. Computer-based accident reconstruction. Computer-based photographic analysis, including close-range photogrammetry, scanning/analysis in Photoshop and use of PhotoModeler to analyze skids and crush patterns. Computer simulation and animation, including the production of presentation-quality video animations. Crash testing and vehicle dynamics testing, data analysis, and reduction.

Forensic Animations and Visualization:

Worked professionally since 2007 on the visual aspect of accident reconstruction. Utilize various tools and methods to achieve accurate representation of computer-based simulation models using tools such as:

- HDS laser scanners (FARO and Leica).
- 3D programs for accurate model representation (3D Studio Max, Maya, Nuke Studio, and NukeX).
- Video tracking software (PF-Track, Nuke).
- Photogrammetry analysis. (PhotoModeler, Nuke, PF-Track, SynthEyes).

PUBLICATIONS

Fatzinger, EC, Landerville JB, Bonsall JS, Simacek DS “An Analysis of Sport Bike Motorcycle Dynamics during Front Wheel Over-Braking,” SAE Publication 2019-01-0426.

ADDITIONAL TRAINING DETAIL

- LEVA Level 2: Digital Multimedia Evidence Processing, August 2019
 - 5-day course on digital video systems. This course exposes students to more advanced theory and hands-on techniques that conform to the Best Practices for the Acquisition and Processing of Digital Multimedia Evidence (DME).
- CAARS 2019 2nd Quarter Training, June 2019
 - Utilizing Video Evidence in Traffic Investigations.
- LEVA Level 1, Forensic Video Analysis & the Law, June 2019
 - 5-day course on digital video systems focused on DME recovery and fundamental understanding of how to recover evidence properly and need to be aware of the issues faced when using digital video in investigations.
- CAARS 2018 1st Quarter Training, January 2018
 - Approach and Implementation of an sUAS (Drone) Program for Accident Investigation.
- SAE, Photogrammetry and Analysis of digital Media, September 2017
 - 3-day course. Processing raw video and photographs, correcting for lens distortion, and using photogrammetric techniques to convert the information in digital media to usable scaled three-dimensional data. Hands-on training using actual case studies and a variety of software titles such as 3D Studio Max, PTLens, Photoshop, and PFTrack will introduce the students to the latest techniques.
- NUKE VFX Compositing Course, 2015 and 2016
 - 2-semester course. Master techniques in rotoscoping, digital painting, keying, scripting and Learn the fundamentals of lighting and the power of mood that it holds, how it can change a scene, in addition to the technical attributes of lighting. Apply depth to your shots using 3D stereo conversion and convert a 2D composite into a 3D composite.
- Pluralsight, Camera Tracking, and Multi-Channel Compositing, March 2016
 - Using a single multi-channel EXR file, color correcting and masking.
 - Backdrop and Dot nodes to organize our node tree.
 - Compositing a 3D render using the channel workflow inside of NUKE.
 - Track the footage and solve a 3D camera within NUKE's 3D space.

- NUKE, Depth-Based Compositing, March 2016
 - Perform both 2D and 3D-based compositing roles. Understanding how to not only utilize the tools out-of-the-box, but also to create simple stereo-based toolsets within Nuke will allow the compositor to fully immerse themselves in what stereo truly means for stereo-based compositing.
- FARO Academy Forensic Workshop, November 2016
 - Engage in demonstrations of the most-used, forensic diagramming, and animation software packages.
 - Learn how to use drones and FARO laser scanners to combine data and discover the limitations of drones without using a terrestrial scanner.
- PC-Crash Advance Training Course, January 2012
 - 3-day PC-Crash training. Modeling several simulations covering a wide range of real-world accident scenarios.
- PC-Crash Training Course, September 2007
 - 4-day PC-Crash training on how to import vehicles, aerials, 3-D roads, etc. Lectures on the theory behind the models. Practice sessions on modeling several simulations covering a wide range of real-world accident scenarios.