

# CASE STUDY: VEHICLE-RELATED OIS

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## Critical Incident Scene Reconstruction



**KNOTT**  
LABORATORY, LLC  
*Digital Media Forensics*

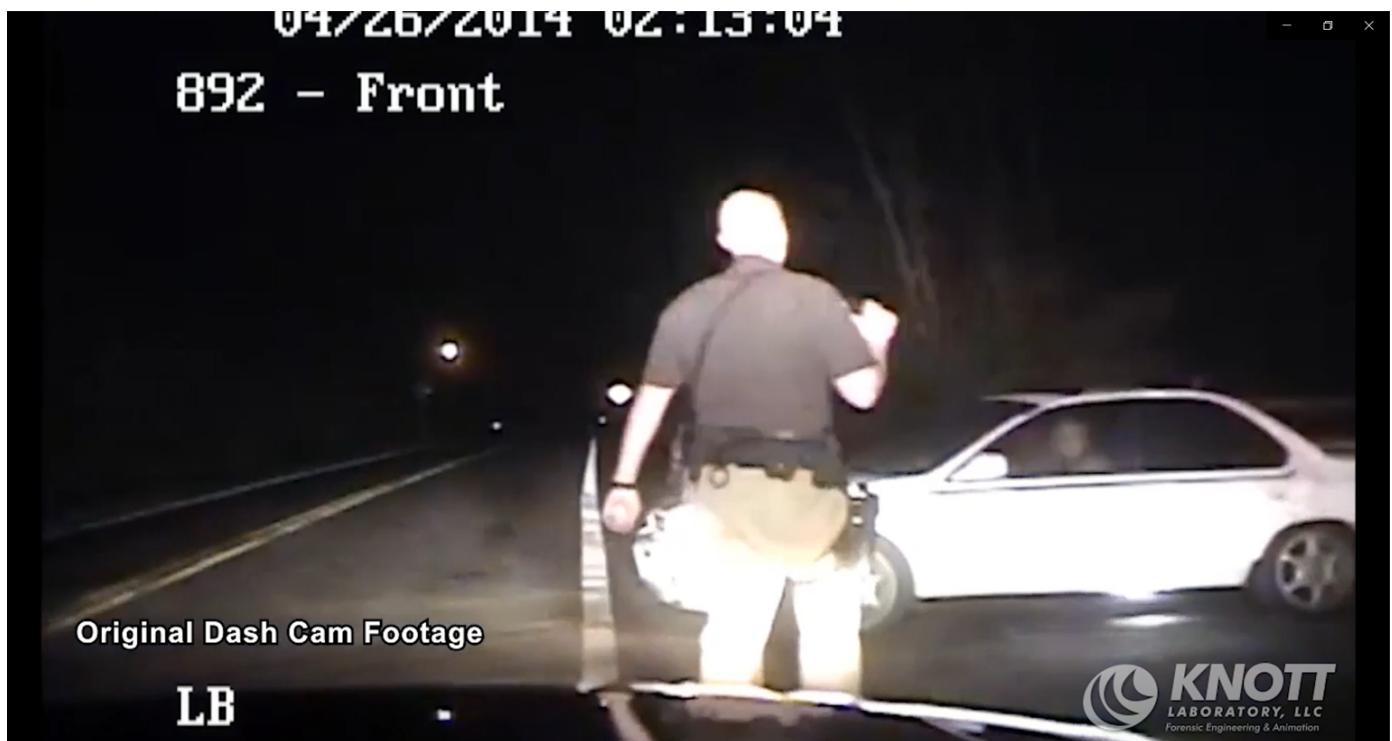


## INCIDENT SUMMARY

On a night in Kentucky, a young woman and her passengers were leaving a field party when they approached a field sobriety check point. Rather than stop, they began to make a left turn past the officer, who then made an attempt to stop them. The officer jumped on the hood of the vehicle and proceeded to fire four shots into the vehicle, killing the driver. The officer stated he felt in danger of being pinned between his cruiser and the young woman's vehicle.

## THE OBJECTIVE

Knott Laboratory's Digital Media Forensics (DMF) team was tasked with using the available digital evidence to reconstruct the scene and provide scientifically accurate details such as positions and speeds throughout the incident. The investigating party aimed to determine whether the officer performed a valid tactic or a needless maneuver resulting in the death of the driver.



Cruiser dash camera footage

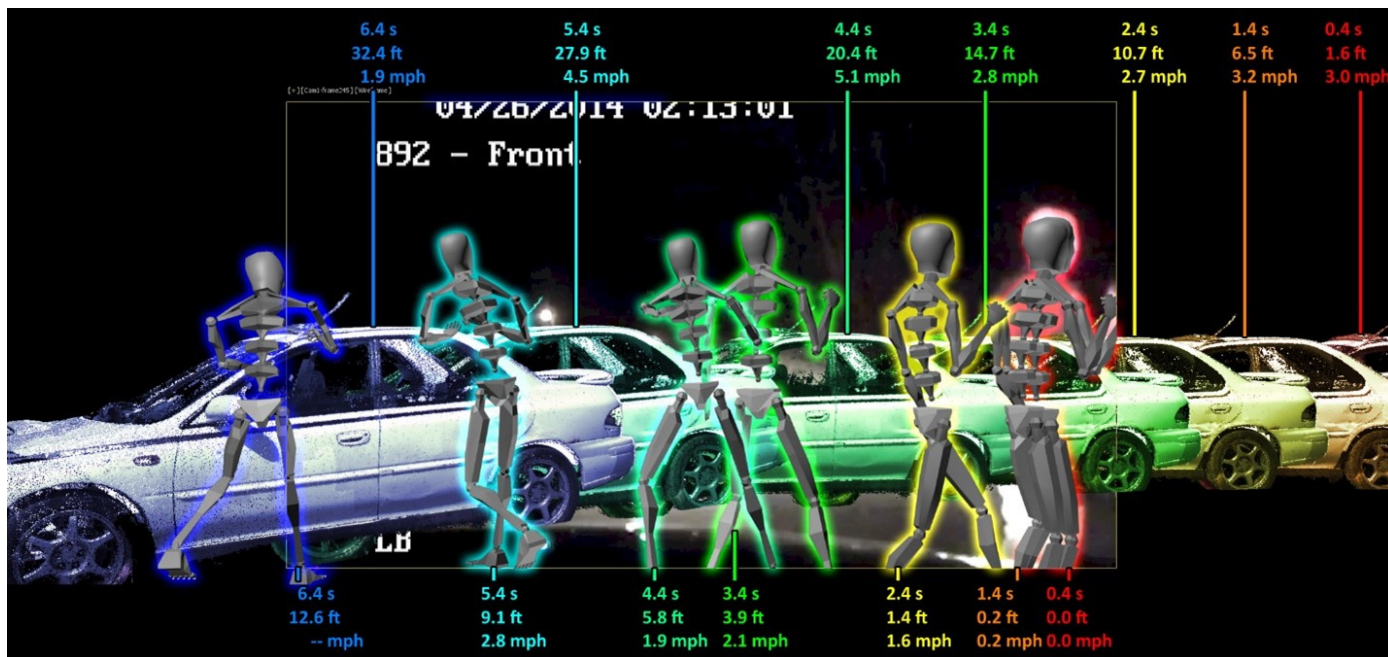
## THE PROCESS

### 1. Gather Data

We were provided with the officer's cruiser dash camera footage, a high definition laser scan of the scene and of the vehicle. From the point cloud (generated by the laser scan) we can accurately measure point-to-point anywhere in the scene.

### 2. Aggregate Data

Using photogrammetry, we matched the position of the cruiser dash camera into the point cloud to give it's exact location and field of view. Then we matched the positions of both the vehicle and officer throughout the incident. With the scene reconstructed, we were then able to measure distances and speeds of people and objects.



Tracking the vehicle and officer's movements, speeds and distance

## THE PROCESS - CONTINUED

### 3. Analyze the Incident

The DMF team performed a thorough analysis, measuring every detail throughout the incident, and were able to come to several conclusions.

- The vehicle made a slow left turn, never accelerating beyond 5.1 mph.
- Once the officer jumped on the hood, the driver began braking the vehicle.
- There was never less than 9 feet between the vehicle and officer's cruiser that would force him to be pinned.



Multiple views of the incident

### 4. Illustrate & Communicate the Incident

We created a video presentation to show the incident in detail and from multiple angles. You may view this presentation in the video here: <https://knottlab.com/services/digital-media-forensics/>



## ABOUT THE AUTHOR

### **Taylor Spiegelberg, B.F.A. – Senior Visualization Expert**

Taylor earned his Bachelor of Fine Arts degree in 3D Graphics and Animation from the University of Colorado. As the lead forensic animator, he works with engineers to create visualizations for accident reconstructions and all manner of investigations. Taylor is an FAA certified drone pilot, which allows him to fly commercially to collect evidence from accident and crime scenes. He has knowledge of various 3D software packages to create scientifically accurate visualizations using photogrammetry, matchmoving, photo-modeling, photo and video editing, 3D modeling and animation.

## ABOUT KNOTT LABORATORY

Knott Laboratory has been an industry leader in forensic engineering for nearly 40 years. The company is comprised of structural and mechanical engineers, fire and explosion investigators, forensic animators, accident reconstructionists, and digital media forensics experts. This unique combination of expertise allows the company to serve a wide variety of industries, such as, attorneys, insurance companies, construction, community management and law enforcement. Each project is assigned a team suited to the particular needs of the case and client. Knott Laboratory then provides investigation, analysis, animation production, and expert witness testimony.

The company is headquartered in Centennial, CO with locations in Fort Collins, Colorado Springs, Grand Junction, Phoenix, Houston, and San Antonio.

To learn more, visit [www.knottlab.com](http://www.knottlab.com).