C55 Image Rectification Using Three-Dimensional Models

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After attending this presentation, attendees will understand how to make an image recitifaction using three-dimensional models.

This presentation will impact the forensic community and/or humanity by demonstrating a new method for rectification of photographs that makes it is possible to handle images that cannot be handled with traditional methods.

Rectification of images at an oblique angle has appeared to be very useful in forensic analysis. This technique is often used in investigations of traffic accidents for providing top view images of skid marks. The three main rules to rectify a photograph are: there need to be four markers in the scene; the real world distances between these markers need to be measured; the surface needs to be flat. With this information a photograph can be rectified and a top view can be created.

However, in some occasions, there are not enough points in the photograph that can be used or the surface is not flat. In these cases it is not possible to rectify these photographs with traditional software and photogrammetry. In this presentation the authors explain the use of a three-dimensional model for the rectification. After projecting the original photograph on the three-dimensional surface of the model, the surface of interest can be viewed from a different angle. In this way a rectified image can be produced. This technique was used successfully in traffic accident reconstructions, bloodstain pattern analysis and measurements on break and entry traces. This technique will be explained by showing two case examples.

Back Projection, Rectification, 3D