

ABSTRACT

The topic being presented describes the generation and population of a low-fidelity graphics model for a driving simulator, using stereo image and high-accuracy positional data. These data are acquired by a simple mobile mapping system. By using the positional data, a sparse model consisting of a road, central road marking, green area and skybox can be generated automatically. This allows for a number of applications, such as the synchronization of the model with the video and the semi-automatic population of road signs into the model data.

An experiment to evaluate both the model and video as a viable source for behavioral testing of drivers is then described. The correlations between driver speed in response to the model and driver speed in response to the video are presented, allowing for an examination on the effect of the fidelity of the driving simulator visual cue stream. The results from this study compared driver speed in a real vehicle with those of the video and model roads, with correlations of 84.6% (between video and ground-truth), 87.3% (between model and ground-truth) and 92.8% (between video and model).

The second topic discussed is future work that includes incorporating steering dynamics into the video sequence, measurement of eye-gaze, physiological responses, acceleration braking and user-experience. Working prototypes of the video steering solution exist and will be shown at the end of the presentation.