Elysium CAD DOCTORtorrent

In the current work, CADdoctor provides an *error estimator* to measure the geometric differences between a 3D CAD model and a 2D image as shown in Fig. \[fig:survey\](b). [**End-to-end geometric error estimator.**]{} The final step of the error estimation process is to calculate the geometric difference between the 3D model and the 2D image. The geometric difference is calculated with respect to the six independent directional pairs of the 2D plane. The six directional pairs are the nominal planar image and a point cloud dataset from three different cameras. These three point cloud datasets are selected such that there is a minimal geometric change between them. This approach is based on the fact that an image distortion occurs when two different cameras take a picture of the same scene [@abraham2008performance]. However, a single-camera scene is mostly defined by its nominal planar image and its surface normal. In CADdoctor, the nominal planar image is projected onto a 3D surface mesh, and the surface normal is computed accordingly. This is an *end-to-end geometric error estimator* since the 3D model is not required during the geometric error estimation process. Figure \[fig:ablation_study_3\] shows the geometric differences between CADdoctor and other alternative error estimators (section \[sec:error_estimators\]) evaluated on multiple dataset pairs. The dataset pairs consist of images captured by a single camera and a multi-camera dataset. The figure shows that CADdoctor can estimate geometric differences between a 3D CAD model and a 2D image, with the smallest L^2 error. For instance, when we compare the reference 2D image, the L^2 error is [**0.9 pixel**]{}. This is a remarkable improvement when compared to the error reported by the cost function, [**4.1 pixel**]{}. This is because the cost function has not taken into account the spatial correlation between the 3D CAD model and the 2D image. However, the proposed error estimator generates a sparse sampling grid that can take into account the spatial correlation. In addition, the approach does not rely on any training data. ![image](figures/ablation_study_3.png){width="\textwidth"} [**Error estimator evaluation.**]{} The proposed error estim 82157476af