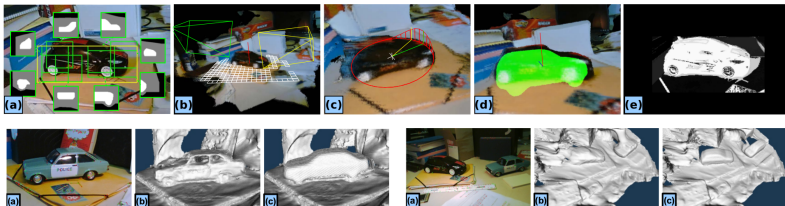


Dense Reconstruction Using 3D Object Shape Priors

A. Dame, V. A. Prisacariu, C. Y. Ren, and I. Reid (CVPR 2013)



- ▶ Incorporation of object-specific knowledge into SLAM
- ▶ Current approaches
 - ▶ Limited to the reconstruction of visible surfaces
 - ▶ Photo-consistency error, sensitive to specularities
- ▶ Initial dense representation using photo-consistency
- ▶ Detection using a standard 2D sliding-window object-class detector
- ▶ A novel energy to find the 6D pose and shape of the object
 - ▶ Shape-prior represented using GP-LVM
- ▶ Efficient fusion of the dense reconstruction with the reconstructed object shape
- ▶ Better reconstruction in terms of clarity, accuracy and completeness
- ▶ Faster and more reliable convergence of the segmentation with 3D data
- ▶ Evaluated using dense reconstruction from KinectFusion