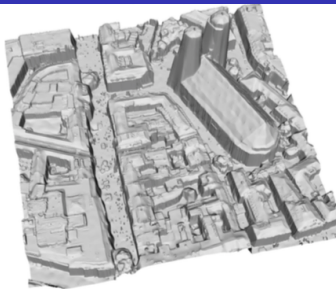


Fast and Accurate Large-scale Stereo Reconstruction using Variational Methods

G. Kusch, D. Cremers (ICCV Workshop 2013)



(a) Left input image



(b) Two-view 3D reconstruction

- ▶ Presents a fast algorithm for high-accuracy large-scale outdoor dense stereo reconstruction of man-made environments
- ▶ Contributions:
 - ▶ Proposes a structure-adaptive second-order Total Generalized Variation (TGV) regularization which facilitates the emergence of planar structures by enhancing the discontinuities along building facades
 - ▶ Uses cost functions as data term which are robust to illumination changes arising in real world scenarios
 - ▶ Instead of solving the optimization problem by a coarse-to-fine approach, proposes a quadratic relaxation which is solved by an augmented Lagrangian method
 - ▶ This technique allows for capturing large displacements and fine structures simultaneously