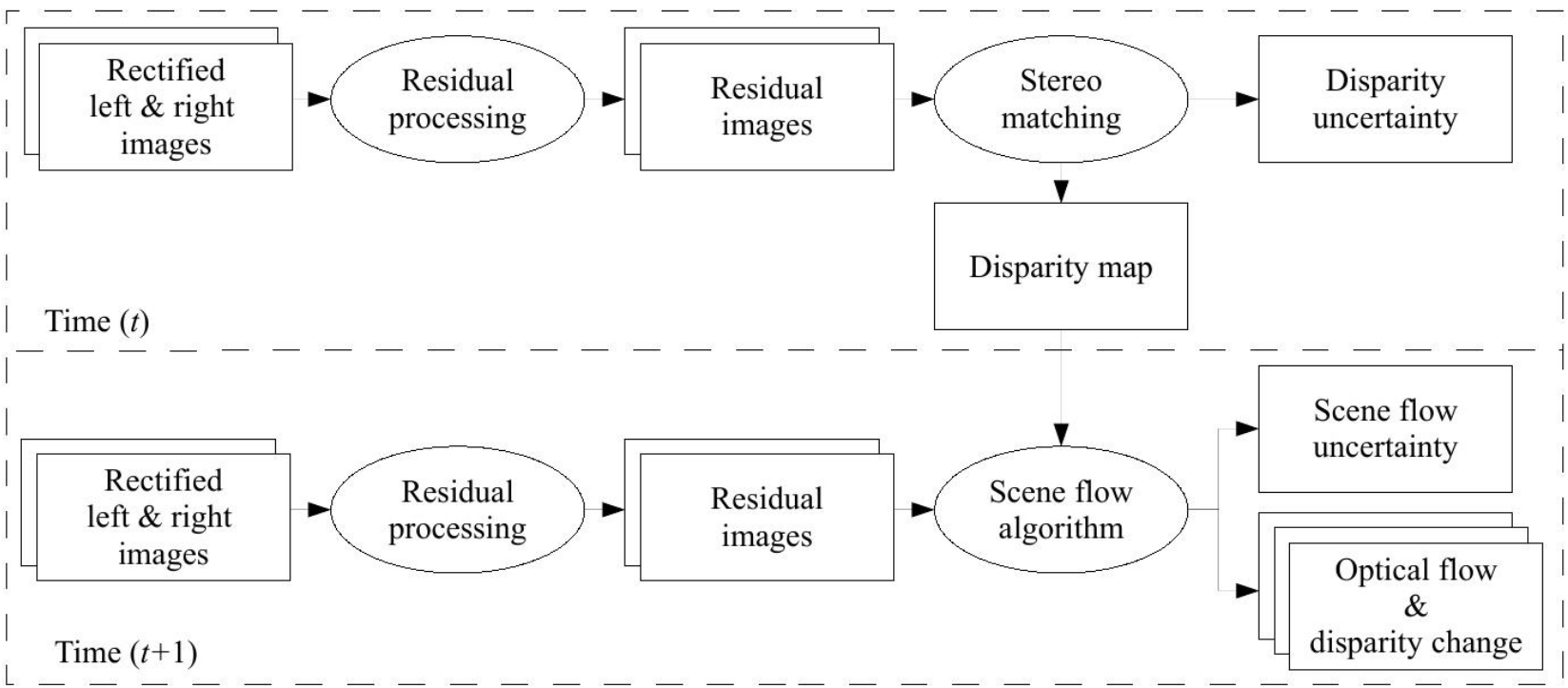
Stereoscopic Scene Flow Computation for 3D Motion Understanding

A. Wedel, T. Brox, T. Vaudrey, C. Rabe, U. Franke and Daniel Cremers (IJCV 2011)



- 3D motion estimation using a variational framework and depth estimation
- Decoupling motion from depth estimation
  - Allows to use most suitable method for the two problems
  - Stereo matching used as constraint for the motion estimation
  - Faster computation on FPGA (depth) and GPU (motion)
- Use TV-L2 smoothing to remove illumination differences between images
- Energy-based uncertainty measure from motion estimation improves motion segmentation
- Evaluation on the synthetic data (rotating sphere and Povray Traffic Scene)
- Qualitative results on real-world scenes