

## **Shape Priors and Image Segmentation: Towards Combinatorial Solutions (Prof. Dr. Daniel Cremers, University of Bonn)**

Abstract:

Numerous efforts have been made to impose shape priors into image segmentation processes. The resulting segmentation process favours segmentations which are consistent with previously observed shape instances or shape evolutions. It is therefore robust to missing or misleading low level information due to noise, background clutter and partial occlusions. While statistical and energy minimization methods allow for a transparent integration of shape prior and image information, the subsequent optimization schemes typically only provide locally optimal solutions with very little insight as to how far the computed solutions are from the globally optimal one.

In my presentation, I will present existing approaches to impose shape priors, I will discuss limitations of local optimization methods and introduce the first efficient algorithm to impose shape priors in a globally optimal manner. The proposed algorithm finds optimal shape-consistent segmentations in the space of all conceivable closed curves.

This is joint work with Thomas Schoenemann.