

The Institute for Software Technology and Interactive Systems in collaboration with the IEEE Austria Section cordially invite you to the following talk by Prof. Daniel Scharstein.

# Scalable Surface-Based Stereo Matching

Prof. Daniel Scharstein

**When?** **Monday, July 7th 2014**  
11:00 - 12:00

**Where?** **Seminar Room 188/2**  
1040 Vienna, Favoritenstraße 9-11  
4th Floor, Staircase 3

## Abstract

Stereo matching -- establishing correspondences between images taken from nearby viewpoints -- is one of the oldest problems in computer vision. While impressive progress has been made over the last two decades, most current stereo methods do not scale to the high-resolution images taken by today's cameras since they require searching the full space of all possible disparity hypotheses over all pixels.

In this talk I will present a new scalable stereo method that only evaluates a small portion of the search space. The method first generates plane hypotheses from matched sparse features, which are then refined into surface hypotheses using local slanted plane sweeps over a narrow disparity range. Finally, each pixel is assigned to one of the local surface hypotheses. The technique achieves significant speedups over previous algorithms and achieves state-of-the-art accuracy on high-resolution stereo pairs of up to 19 megapixels.

I will also present a new dataset of high-resolution stereo pairs with subpixel-accurate ground truth, and provide a brief outlook on the upcoming new version of the Middlebury stereo benchmark.

## Bio

Daniel Scharstein, Professor of Computer Science at Middlebury College in Vermont, studied Computer Science at the Universität Karlsruhe, Germany, and received his PhD from Cornell University in 1997. His research interests include computer vision, image-based rendering, and robotics. He maintains several online computer vision benchmarks at <http://vision.middlebury.edu>. He is currently on sabbatical at the German Aerospace Center (DLR) in Oberpfaffenhofen, Germany.

## Further information

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