



Einladung zum Vortrag

**Herr Jan-Michael Frahm**

University of North Carolina at Chapel Hill

## **Estimating Life Realistic World Models Leveraging Crowd Sourced Data**

Crowd sourced imagery (images and video) is the richest data source available for 3D reconstruction of the world. The tremendous amount of imagery provided by photo sharing web sites, e.g. Flickr, and video sharing sites, for example YouTube, not only covers the world's appearance, but also reflects the temporal evolution of the world and its dynamic parts. It has long been a goal of computer vision to obtain life like virtual models from such rich imagery. The major current research challenges are the scale of the data, e.g. the recently released Yahoo 100 million-image dataset which is still only a fraction of what is needed, the robustness, the completeness of the registration, and the lack of data for dynamic elements. Specifically, we are currently facing significant challenges to process said imagery within a reasonable time frame given limited compute resources. This is particularly true as we move to personal virtual and augmented reality, which aim to explore these data. The talk discusses my work on highly efficient image registration for the reconstruction of static 3D models from worldscale photo collections on a single PC in the span of six days, as well as our related work on image-based search to address the scalability. I will also discuss the efforts to overcome the challenges achieving registration completeness and robustness. Our novel streaming reconstruction approach aims to ease the above current challenges to achieve a 3D model from unorganized image data. Additionally, I will present my work towards overcoming the lack of data for the reconstruction of scene dynamics to achieve the goal of bringing the 3D models to life. For example, by reconstructing people and fountains, using crowdsourced imagery and videos.

### **Biography**

Jan-Michael Frahm is an Associate Professor at University of North Carolina at Chapel Hill where he heads the 3D computer vision group. He received his Dr.-Ing. in computer vision in 2005 from the Christian-Albrechts University of Kiel, Germany. His dissertation, "Camera Self-Calibration with Known Camera Orientation" received the prize for the best Ph.D. dissertation of the year in CAU's College of Engineering. His Diploma in Computer Science is from the University of Lübeck. His research interests include a variety of topics on the intersection of computer vision, computer graphics, robotics, and. He has over 100 peer-reviewed publications and is editor in chief for the Elsevier Journal on Image and Vision Computing.

**Der Vortrag findet am Dienstag, 17.10.17 um 13:15 Uhr im SR 101 des Instituts für Informatik, Konrad-Zuse-Haus (Albert-Einstein-Straße 22) statt.**

Interessenten sind herzlich eingeladen.

Prof. Oliver Staadt

## **INSTITUT FÜR INFORMATIK**