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Algorithms for 3D film content generation and post-processing

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In this talk we present algorithms for 3D reconstruction and novel view synthesis that form part of a 3D film processing chain which aims at generating high-quality 3D content for different types of 3D displays. The first part of the talk focuses on a trifocal camera set-up consisting of a high-end main camera and a compact assistant stereo rig which are aligned in an L-shape configuration. We discuss different strategies for stereo matching between the main and assistant cameras along with challenges posed by our specific camera arrangement. We further address the need for depth map post-processing and inpainting techniques in order to generate high-quality novel views. The results of our trifocal system with virtual view synthesis are evaluated by a user study. In the second part of the talk, we concentrate on 3D content generation from monoscopic film material. We describe a method for converting original 2D image sequences to 3D content based on comfortable user scribbles placed on key frames. The initially sparse depth values are propagated throughout the video volume to obtain temporally and perceptually coherent 2D-to-3D conversions. The results of this approach are illustrated on a variety of test material.

Biography

Margrit Gelautz is an Associate Professor at Vienna University of Technology, Austria, where she directs a research group on Image and Video Analysis & Synthesis with a focus on 3D film/TV applications. She is Co-founder of emotion 3D, a spin-off company working in the field of 3D imaging/displaying and mobile vision. She has directed a number of research projects in national and international collaboration and recently co-edited a book on Advances in Embedded Computer Vision. She was Director of TU Vienna's Doctoral College Computational Perception (2010-2013) and Vice-chair of the IEEE Austria Section (2012-2014).

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