

# Image Processing for Large Volume Data in Sparse Representations

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Modern industrial computed tomography can generate volume data of the size of 1TB and larger and many of the scanned objects are unique, for example cars in reverse engineering or cultural heritage. To handle such “bigtues” on normal hardware, compression is unavoidable and methods have to be carefully designed that work on the sparse compressed data only. Once wavelet compression is the tool of choice, this means that we can only use the wavelet coefficients while access to the full decompressed image is out of question. This affects all stages of the process, from vizualization and standard image manipulations up to segmentation.

The talk presents some application examples and the mathematical background especially for efficient real time denoising based on an approximation of the TV norm from wavelet coefficients and a semi-automatic segmentation process based on feature learning.

**Joint work with:** Benedikt Diederichs, Thomas Lang, Andreas Michael Stock