

## Diploma/Master/Bachelor Thesis

### Topic: Tracing of filamentous structures and membranes in electron tomograms

Electron tomography is new and currently the only technique, which can achieve molecular resolution of cells and organelles close to their native environment. The cluster of excellence “macromolecular complexes” has purchased a high-end, state of the art electron microscope, which routinely produces several ten tomograms of cells with roughly 100GByte of data per day. The tomograms, which have a resolution of ~4 nanometers, are visualized in 3D and are being carefully interpreted by biologists. In order to facilitate the interpretation of the tomograms the membranes e.g. cell membrane, nuclear membrane, etc. as well as the filamentous structures e.g. microtubule, actin filaments, etc. need to be automatically traced and visualized. An algorithm needs to be conceived, developed and implemented for this purpose.

Our group is world leading in the development of image processing techniques for electron tomography. We have access to a high-end computing cluster, programmable GPUs, and provide the necessary facilities for a successful and fruitful thesis.

Adequate payment will be provided.

Work description:

20% theory

50% development in C/C++ and/or MATLAB

30% application

For detailed information please contact:

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