Sönke Bartling

Doctoral thesis in 2004 in Hannover Medical School, about “Flat-panel CT of the temporal bone”; Research in flat-panel CT of the human skull base, maxillo-facial region and for intraoperative navigation including research stays at Surgical Planning Lab and CIMIT, Harvard Medical School & General Electric R&D upstate NY. From 2006 Postdoctoral work at DKFZ, Heidelberg. Currently also resident in Radiology.

Small-animal CT

In biomedical research micro Computed Tomography (micro-CT) was suggested to investigate tissues and small animals. Its use to characterize bone structures, vessels (e.g. tumor vascularization), tumors and soft tissues such as lung parenchyma has been shown and is of great value for basic research. When co-registered, micro-CT can add structural information to other small-animal imaging modalities. However, due to fundamental CT principles, high-resolution imaging with micro-CT demands for high x-ray doses and long scan times to generate a sufficiently high signal-to-noise ratio. Long scan times in turn make the use of extravascular contrast agents difficult. Recently introduced flat-panel based mini CT systems offer a valuable trade-off between resolution (~200 µm), scan time (0.5 s), applied x-ray dose and scan field-of-view. This allows for angiography scans and follow-up examinations using iodinated contrast agents having a similar performance compared to patient scans. Furthermore, dynamic examinations such as perfusion studies as well as retrospective motion gating are currently implemented using flat-panel CT.

Contact:

Dr. Sönke Bartling
Junior Group Molecular Imaging,
Department Medical Physics in Radiology,
German Cancer Research Center
INF 280, 69120 Heidelberg,
Germany

Tel: -49 -6221-2686
Email: *s.bartling@dkfz.de*
www.soenkebartling.de

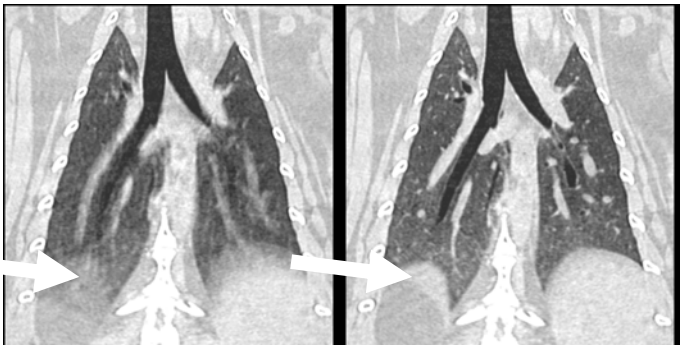
Future Projects and Goals

• Refinment of intrinsic cardiac and respiratory gating in cone-beam small animal CT until no-userinteraction and no external sensors
• Development of a non-toxic particulate CT contrast media for plaque, lymph node, liver and blood-pool imaging through polymerization of standard CT contrast media
• Commercial Small animal imaging service

Selected Publications

Bartling S, Stiller W, Semmler W, Kiessling F.
Small Animal Computed Tomography Imaging. Current medical imaging reviews. 2007 Feb; 3(1), 45-59

Bartling SH, Stiller W, Grasruck M, Schmidt B, Peschke P, Semmler W, Kiessling F.
Retrospective motion gating in small animal CT of mice and rats. Invest Radiol**.** 2007 Oct;42(10):704 14.



Rabbit lung without motion correction (left) and intrinsic motion correction (right). Through motion corretion – among others – the diaphragm is much better delineated (arrow)