

SWI Data Processing Tool

Notes 25th July 2008

The Matlab function SWI.m has been written to assist with the processing and viewing of SWI data. It can be tested on the data in /g1/barker/edden/SWI/BrainDemo/003.

Data Requirements

SWI scans *must* save magnitude and phase data. The tool currently assumes that these scans are outputted as dicom files (PAR/REC not currently implemented), and that, when ordered numerically, the first half of the scans are the magnitude images and the second half the phase. This is correct for current Philips dicom output.

Simple Tool Operation

In the folder which contains the SWI dicoms, run SWI in Matlab. Press *Load All and Display*. On the first iteration, this will use the **dicomread** function to pull the data into Matlab and then save a file **data.mat**. Thus when the data is revisited, this .mat file can be loaded to avoid the lengthy dicomread step.

Press *Use Defaults*. This will perform the three steps of SWI processing without opportunity to alter the parameters (phase filter width, phase mask exponent, MinIP depth). Images should then be viewable in the display window.

Image type (Magnitude, Real, Phase, Mask, MinIP), slice number (through the slider) and orientation (Axial, Coronal, Sagittal – not anatomically correct) can be selected.

Note that the MinIP is only calculated in one direction at a time (perpendicular to the current display plane). If the plane is subsequently altered, *Calculate MinIP* must be pressed again to give the desired images.

Selected References:

Tong KA, Ashwal S, Obenaus A, Nickerson JP, Kido D, Haacke EM. Susceptibility-weighted MR imaging: a review of clinical applications in children. Am J Neuroradiol. 2008 Jan;29(1):9-17. Epub 2007 Oct 9.

Xu Y, Haacke EM. The role of voxel aspect ratio in determining apparent vascular phase behavior in susceptibility weighted imaging. Magn Reson Imaging 2006;24:155–60

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Sehgal V, Delproposto Z, Haacke EM, et al. Clinical applications of neuroimaging with susceptibility-weighted imaging. J Magn Reson Imaging 2005;22:439–50

Haacke EM, Xu Y, Cheng YC, et al. Susceptibility weighted imaging (SWI). Magn Reson Med 2004;52:612–18