Bruker2nifti: Magnetic Resonance Images converter from Bruker ParaVision to Nifti format

Sebastiano Ferraris[1], Dzhoshkun Ismail Shakir[1], Johannes Van Der Merwe[2], Willy Gsell[3], Jan Deprest[1,2,4], and Tom Vercauteren[1,2,4]

[1] *Translational Imaging Group, Centre for Medical Image Computing (CMIC), Department of Medical Physics and Bioengineering, University College London, UK*
[2] *Biomedical MRI, Department of Imaging and Pathology, KU Leuven, Belgium.*
[3] *Department of Development and Regeneration, Organ System Cluster, Group Biomedical Sciences, KU Leuven, Belgium.*
[4] *Wellcome/EPSRC Centre for Interventional and Surgical Sciences, University College London, UK.*

July 28, 2017

1 Motivations and Summary

In clinical and pre-clinical research involving medical images, the first step following a Magnetic Resonance Imaging dataset acquisition, usually entails the image conversion from the native scanner format to a format suitable for the intended analysis. The Bruker ParaVision proprietary software is not currently providing the tools for the data conversion to a suitable open formats for research, such as nifti [CAB+04], for which most of the available tools for medical image analysis are implemented.

For this purpose we have designed and developed *bruker2nifti*, a pip-installable Python tool provided with a Graphical User Interface to convert from the native MRI Bruker format to the nifti format, without any intermediate step through the DICOM standard formats [MDG08].

Bruker2nifti is intended to be a tool to access the data structure and to parse every Parameter Files of the Bruker ParaVision format into python dictionaries, to select the relevant information to fill the Nifti header and data volume. Lastly it is meant to be a starting point where to integrate possible future variations in Bruker hardware and ParaVision software future releases.

2 Acknowledgements

References

[CAB^{+}04] Robert W Cox, John Ashburner, Hester Breman, Kate Fissell, Christian Haselgrove, Colin J Holmes, Jack L Lancaster, David E Rex, Stephen M Smith, Jeffrey B Woodward, et al. A (sort of) new image data format standard: Nifti-1. *Neuroimage*, 22:e1440, 2004.

[MDG08] Mario Mustra, Kresimir Delac, and Mislav Grgic. Overview of the dicom standard. In *ELMAR, 2008. 50th International Symposium*, volume 1, pages 39–44. IEEE, 2008.