Post-doctoral position
Motion-corrected reconstruction for neuropediatric MRI

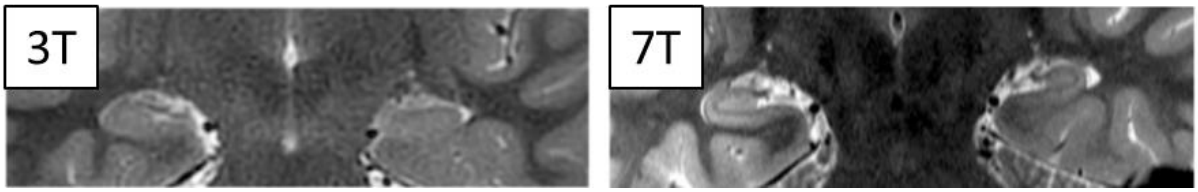
IADI, Nancy, France

Summary

A 24-month post-doctoral position is available in IADI (Inserm U1254, Université de Lorraine), Nancy, France. The position is open for candidates with strong background in MRI physics, applied mathematics or image processing, starting from January 2022.

The objective of the project is to develop motion-robust acquisition and reconstruction strategies for neuropediatric MRI. The methods will be based on joint optimization techniques, which allow the image and motion parameters to be reconstructed simultaneously[1,2]. Methods will be investigated that use the raw MRI data only, or in combination with extra motion information such as self-navigation MRI data (i.e. repeated k-space center) or Pilot Tone data[3]. Initial developments and validation will be conducted at 3T (Nancy). The ultimate aim of the project is to apply the methods to pediatric neuroimaging at 7T (collaboration with NeuroSpin, Paris-Saclay).

[1] F Odille et al., IEEE Trans Med Imaging. 2016 Jan;35(1):197–207.
[2] L Cordero-Grande et al., Magn Reson Med. 2020;84(2):713–26.
[3] T Vahle et al, Invest Radiol. 2020 Mar;55(3):153–9.



Work environment

This project is part of the ANR-funded project MOSAR (Advanced control of head motion and specific absorption rate to leverage the potential of 7 Tesla MRI for pediatric neuroimaging), in collaboration with NeuroSpin (CEA, CNRS, Université Paris Saclay). IADI has expertise in MR image reconstruction, motion correction, MR-compatible instrumentation, and has access to a Siemens 3T Prisma scanner, equipped with state-of-the-art research tools (in-house real-time system for motion sensors, Pilot Tone navigation, Gadgetron reconstructor etc.). Ethics protocols are available to test the methods in healthy subjects and patients. Our collaborators in NeuroSpin will provide raw data from a clinical 7T Siemens system, equipped with a dedicated head coil (8TX/22RX), for the pediatric neuroimaging application.

Application

Applicants are invited to send their CV, motivation letter and references to Freddy Odille (freddy.odille@inserm.fr) and Pierre-André Vuissoz (pa.vuissoz@chru-nancy.fr).

Imagerie Adaptative Diagnostique et Interventionnelle - Inserm (U1254), Université de Lorraine
Bâtiment Recherche, CHRU de Nancy Brabois, 54511, Vandoeuvre-lès-Nancy, FRANCE
http://www.iadi.fr/