Research Fellowship in faster, safer and motion-robust pediatric MRI.

A post-doctoral position to develop acquisition and reconstruction strategies for efficient fetal and pediatric MRI is available at the Athinoula A. Martinos Center for Biomedical Imaging, Boston, MA. A group of mentors will provide well-rounded supervision in encoding/reconstruction (Dr Berkin Bilgic), clinical application/translation (Dr Michael Gee), and physics/sequence development (Dr Borjan Gagoski).

The position will capitalize on state of the art 3T magnets (Siemens: Vida, Prisma, Skyra; GE: Premier) to improve the speed, motion-robustness and safety of fetal and pediatric imaging acquisitions. The developed software technologies will be able to take advantage of additional cutting edge hardware systems housed at the Martinos Center, such as the Terra and Magnetom 7T scanners, high-performance 3T Connectom magnet, two MR-PET scanners, Skope field monitoring systems, combined B0 shim/radiofrequency “AC/DC” coils as well as a multi-channel TMS head coil. This synergistic approach that combines software and hardware technologies exemplifies the collaborative environment at the Martinos Center. Through the mentorship provided by Drs. Gee (Massachusetts General Hospital, MGH) and Gagoski (Boston Children’s Hospital, BCH), additional, numerous and multi-vendor 1.5 – 3T clinical scanners will be at the disposal of the candidates.

This position aims to develop acquisition and reconstruction methods including

i. Rapid, free-breathing structural imaging for fetal and abdominal imaging,

ii. Motion-robust, fast, high-resolution pediatric neuroimaging, with additional goals of reducing contrast dosage in cancer imaging,

iii. Motion-robust diffusion and quantitative parameter mapping in the body,

iv. GRASP-type continuous acquisition with subspace/deep learning reconstruction, and

v. Scan-specific / unsupervised network-based reconstruction.

This role will also provide an opportunity for a strong academic-industrial partnerships with Siemens Healthineers, GE Healthcare and Subtle Medical in translating new technologies into products. An example of technology that has been successfully translated is the Simultaneous Multi-Slice (SMS) technique, which has been distributed to a large number of research and clinical sites worldwide (www.nmr.mgh.harvard.edu/software/c2p/sms), and is now a product. Such technology is changing how diffusion and functional MRI are being performed today. Current products that are being jointly developed by our group and Siemens include wave-CAIPI (for efficient high-resolution imaging) and NEATR (for rapid clinical imaging using model-based and deep learning reconstruction).

A PhD in electrical/biomedical engineering, physics, or a related field is required. The ideal candidate should have a strong analytical background while displaying a high level of creativity. The candidate should have first-hand experience in MR physics, reconstruction algorithms and/or pulse sequence programming. Experience with Matlab and Python, and Siemens IDEA and GE EPIC environments are desirable.

APPLICATION: Enquiries may be directed to Drs. Bilgic (bbilgic@mgh.harvard.edu), Gee (msgee@mgh.harvard.edu) and Gagoski (borjan.gagoski@childrens.harvard.edu). Interested applicants should send a CV, cover letter and contact information of referees.

The position is full-time with benefits and is available immediately. A two-year time commitment is required. MGH is an Equal Opportunity/Affirmative Action Employer.