Post-Doctoral Research Position
Statistical Methods for Neuroimaging Data Analysis

Quantitative Medical Imaging Section (QMI)
National Institute of Biomedical Imaging and Bioengineering (NIBIB)
National Institutes of Health (NIH)

The Section on Quantitative Medical Imaging (QMI) in the Intramural Research Program of the National Institute of Biomedical Imaging and Bioengineering (NIBIB) in the National Institutes of Health (NIH) is soliciting applications from post-doctoral level scientists interested in the development and application of statistical methods for the analysis of quantitative data in neuroimaging (with emphasis on quantitative diffusion magnetic resonance imaging, or MRI).

QMI has a long-standing history of developing methods that increase accuracy and reproducibility of quantitative structural MRI studies with the goal of developing robust MRI-based biomarkers for both neurological and non-neurological clinical applications. For a general overview about QMI’s research projects and publications, please refer to https://www.nibib.nih.gov/labs-at-nibib/quantitative-medical-imaging.

Resources: QMI is part of the larger MRI research community at NIH, which has active programs in clinical and preclinical research. Equipment available in the NIH MRI Research Facility includes a number of 3T and 7T human scanners and 4.7T, 7T, 9.4T and 11.7T animal scanners. Recently, we procured a high-performance gradient insert for a GE 3T MRI system and a field camera will be available soon to monitor real k-space trajectories. We are developing a number of human brain imaging applications on this system. This will lead to the availability of data of unprecedented quality, both in-vivo and ex-vivo, that will open new avenues for the understanding of brain structure, architecture, perfusion dynamics, morphology, and physiology.

We are involved in several collaborative clinical studies, including research that concentrates on multiple sclerosis, postnatal brain development and prematurity, and pre-surgical planning for focused ultrasound therapy in essential tremor.

Finally, we are creating high-quality anatomical atlases that could be used for the analysis of data available from large multicenter studies.

Qualifications:
• We are looking for a creative postdoctoral fellow who has interest and expertise in the development and implementation of novel statistical methods for the analysis of quantitative MRI data by integrating classical statistical approaches (parametric and non-parametric tests, multiple comparison, Bayesian inference, linear and non-linear mixed effects models, etc...) and machine learning strategies (supervised learning with Bayesian approaches; neural network-based, decision tree, and forest-based approaches; unsupervised learning for feature representation; and feature selection to determine most viable biomarkers).

• Candidates must have a Ph.D. (or be in the final stages of achieving their degree) in an area such as mathematics, statistics, biomedical engineering, neuroscience, or a related discipline.

• Previous work experience with common quantitative structural MRI techniques, such as diffusion MRI, perfusion MRI, and relaxometry is desirable.

• Familiarity with at least one programming or scripting language such as C/C++, Matlab, Python, and R, as well as familiarity with existing neuroimaging tools such as Freesurfer, AFNI, FSL is desirable.

• Excellent verbal and written communication skills are required.

Position includes salary and benefits commensurate with NIH guidelines for post-doctoral fellows. NIH is an equal opportunity employer.
Location: Building 13, NIH main campus, Bethesda, MD.

For more information, please contact Dr. Carlo Pierpaoli (pierpaoc@nih.gov) with a statement of interest, current CV, and the contact information of three references. Applications will be reviewed as they are received and the position will be open until filled.