Radiology and Imaging Sciences
National Institutes of Health Clinical Center
U.S. Department of Health and Human Services

NIH

Post-Doctoral Fellowship
Medical Image Processing – Machine Learning & Computer-Aided Diagnosis

A post-doctoral fellowship is available in the Imaging Biomarkers and Computer-Aided Diagnosis laboratory at the NIH Clinical Center in Bethesda, Maryland, USA. The primary focus of the lab is the development and use of advanced computational methods for medical imaging and computer-aided diagnosis. Specific areas of interest include anomaly detection/classification/segmentation in medical imaging (volumes and images), image/volume registration (inter/intra- modality), multi-modal fusion of imaging + text + patient health data (e.g. lab tests), generative modeling (GANs and Diffusion-based methods), large language models (e.g. ChatGPT, Llama-2), and learning with limited amounts of data (active/zero/few-shot learning, meta-learning). Candidates with backgrounds in machine/deep learning, computer vision, modeling, optimization, and statistics are sought. Examples of recent projects include automated assessment of body composition on CT or MRI, cirrhosis of the liver, associations between pancreas morphology and diabetes, and tumor burden in cancer patients.

Fellows will work closely with staff scientists and practicing clinicians. They will have access to data acquired by state-of-the-art whole body CT, MRI, MRI-PET, and PET-CT scanners housed at America's premier research center. Previous fellows have benefited from a thorough introduction to the radiology workflow at our research institution and will have the opportunity to shadow practicing radiologists. They will also have access to high performance computing/GPU clusters and advanced graphics workstations.

Basic Qualifications: Ph.D. in a computational field (Computer Science, Electrical Engineering, Biomedical Engineering, or related discipline with experience in Machine Learning, Computer Vision, or Image Processing), along with publications in top-tier conferences and journals.

Desirable Qualifications: Strong theoretical and practical background in machine/deep learning, computer vision, image or video analysis such as object detection and recognition, pattern recognition, sparse numerical methods for optimization, and statistics. Prior knowledge about medical imaging is a plus, but it is not a must. Enthusiasm in solving real-world clinical imaging problems using peta-scale datasets is required. Hands-on coding skills in one or more of Python/MATLAB/C/C++ and deep learning frameworks (e.g., PyTorch, TensorFlow, Keras) are required.

Typical fellowships are for 2-3 years but longer ones are possible. Applications should include a CV, brief statement of research interests and three letters of reference. DHHS and NIH are Equal Opportunity Employers. Candidates are encouraged to apply irrespective of their nationality or citizenship status. Both U.S. and non-U.S. citizens will be considered.

Application Instructions:
Email application materials to Dr. Ronald Summers at rms@nih.gov.

Ronald Summers, M.D., Ph.D., FSAR, FAIMBE
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Website: https://www.cc.nih.gov/meet-our-doctors/rsummers.html