

Medical Image Processing and Machine Learning Postdoctoral Research Associate Department of Bioengineering University of Illinois Urbana-Champaign

Qualified candidates are sought for a Postdoctoral Research Associate position in the Computational Imaging Science Laboratory in the Department of Bioengineering at The Grainger College of Engineering at the University of Illinois Urbana-Champaign. The successful candidate will develop machine learning models—i.e., both statistical learning and deep learning—to predict patient outcome from multi-modal image and genomic data. The candidate must have a clear understanding of the current literature regarding "-omics" analyses and, specifically, how to optimize and validate machine learning models for medical data. The overall goal of the project is to assess the power of image data to predict survival in cancer patients. These analyses will serve as preliminary data in support of future funding proposals written with assistance from the ideal candidate. Specific project tasks include: 1) registering and verifying physician-identified regions of interest from DICOM structure files; 2) extracting and validating radiomics features from image data; 3) developing statistical learning models with features as the predictors and patient survival as the outcome; 4) training multi-modal deep learning models on various image and genomics data; and 5) comparing the results to previous models in a statistically principled way. The successful candidate will drive this project forward and thus needs to be very knowledgeable and self-motivated.

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Required qualifications include:

- A Ph.D. in biomedical engineering, statistics, data science, computer science, or closely related field (ABD applicants may apply and confirmation of your completed degree requirements must be provided on or before the start date). Per University policy, eligible candidates must have obtained their Ph.D. degree within 10 years of the start date of the position.
- Demonstrated programming proficiency with Python, Pandas, sklearn and either Tensorflow or PyTorch.
- Experience with a variety of statistical learning techniques such as random forests, support vector machines, cluster analysis, and canonical correlation analysis.
- Experience with coding, training, and tuning deep neural networks.
- Demonstrated knowledge of statistics and probability, especially for the post-hoc evaluation of models.
- The ideal candidate will have experience in the cleaning and analysis of *medical image data* and some basic knowledge of human anatomy as it is seen in tomographic imaging.
- *Exceptional communication and organizational skills are crucial* as this position requires the performing, scheduling, documenting, and reporting of a wide-range of analyses for an interdisciplinary research team.

The Postdoctoral Research Associate is a full-time, benefits-eligible position appointed on a 12-month service basis. *The initial appointment is for one year* with the possibility of extension based on performance and funding. This position is available immediately but the start date is negotiable. Salary will be commensurate with experience and qualifications.

To apply for this position, please submit a cover letter, curriculum vitae, and names/contact information for three references to Dr. Frank Brooks at fjb@illinois.edu. *Please include "Postdoctoral Research Associate" in the subject line of the email.* Full consideration will be given to complete applications received until the position is filled.

The University of Illinois conducts criminal background checks on all job candidates upon acceptance of a contingent offer. Convictions are not a bar to employment. The University of Illinois System requires candidates selected for hire to disclose any documented finding of sexual misconduct or sexual harassment and to authorize inquiries to current and former employers regarding findings of sexual misconduct or sexual harassment. For more information, visit "[Policy on Consideration of Sexual Misconduct in Prior Employment](#)."

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