

POSTDOCTORAL SCHOLAR EMPLOYMENT OPPORTUNITY

The University of Southern California (USC), founded in 1880, is located in the heart of downtown Los Angeles and is the largest private employer in the City of Los Angeles. USC is consistently ranked among the nation's most prestigious universities, and the USC Leonard Davis School of Gerontology features one of the world's best degree and research programs in gerontology. The USC Davis School has an international reputation as a hub of aging research and, with additional strong programs throughout the university, leads the way in defining and advancing the field of gerontology.

The Irimia Laboratory (<http://www.andrei-irimia.com>) at the USC Leonard Davis School of Gerontology is dedicated to studying the effects of traumatic brain injury upon the aging brain using multimodal neuroimaging (MRI, fMRI, DTI, DSI, MRS, MRA, PET, CT), neuroelectrophysiology (EEG, MEG) and computational modeling grounded on biophysics and applied mathematics. Approaches afforded by fields as varied as network theory, machine learning, neural networks & deep learning, multivariate statistics, scientific visualization and nonlinear dynamics have allowed the PI and his collaborators to quantify brain disease evolution in older adults and to contribute to the development of novel, patient-tailored approaches to clinical patient care.

The laboratory seeks a postdoctoral research scholar interested in using neuroimaging, big data science and related approaches to study how traumatic brain injury and intracerebral hemorrhage impact neurodegeneration, neurocognitive function and connectome reorganization in older adults. The scholar will use advanced techniques for visualization, computational neuroanatomy, longitudinal neuroimage analysis and multivariate statistical models of brain aging to facilitate scientific discovery and to assist the development of next-generation protocols for patient-tailored clinical care and personalized medicine. The ideal candidate will have expertise in multimodal structural MRI and diffusion tensor imaging (DTI), strong skills in image processing (particularly registration, segmentation, surface modeling, voxel-based morphometry), network theory for connectomic analysis, experience with neuroimaging analysis (FreeSurfer, AFNI, FSL, SPM or similar) and statistical analysis (SPM, SPSS). Expertise in machine learning, including neural networks, deep learning and classification methods (support vector machines, probabilistic graphical models, ensemble models, etc.) would be highly beneficial. Experience in nonlinear dynamics or neurophysiology [electro- or magnetoencephalography (EEG, MEG)] is welcome. Excellent scientific writing skills and a strong publication record are highly desirable. Outstanding programming skills (MATLAB, preferably) and working knowledge of Linux are required. The successful applicant will be able to work independently with a small amount of supervision and should demonstrate good interpersonal skills as well as an interest in collaborative research.

A PhD or equivalent doctorate in neuroscience, neurobiology, engineering, biophysics or applied mathematics is required. Applicants with degrees in related fields will also be considered, and individuals with strong quantitative and computational backgrounds are

particularly encouraged to apply. A strong interest in building an outstanding publication record is essential.

The successful candidate will work closely with the PI and his collaborators. Extensive training will be available in all areas of this highly impactful project, with a strong view towards enhancing future career prospects for the successful candidate. As an employee of USC, the scholar will be a part of a world-class research university and a member of the Trojan Family, which is comprised of the faculty, students and staff who make the university what it is. This is a temporary, fixed-term position for the period of one year. It is renewable for a second year, based on performance and availability of funding. The candidate must have a PhD by the time of employment. Salary is competitive and contingent upon experience. The University of Southern California strongly values diversity and is committed to equal opportunity in employment. Women and men, members of all racial and ethnic groups, individuals with disabilities, and veterans are encouraged to apply.

Minimum education: PhD or equivalent doctorate within previous three years
Minimum experience: 0-1 year
Minimum field of expertise: neuroscience, engineering, biophysics, mathematics or related

Essential qualifications: proficiency in scientific programming (ideally Matlab)
excellent writing skills geared toward writing journal papers
passion for scientific writing
strong oral communication skills
ability to work well with a diverse research team
ability to work efficiently and independently
self-motivation and strong interest in neuroscience research

Ideal qualifications: MRI analysis (FreeSurfer, FSL, AFNI, 3D Slicer or similar)
DTI tractography & analysis (TrackVis or similar)
algorithm design for neuroimage analysis
biostatistics for neuroimaging research
neuroanatomy, connectomics and brain network theory

Applicants should submit the following material in electronic format directly to the PI at [irimia\[at\]usc.edu](mailto:irimia[at]usc.edu) –

1. cover letter
2. statement of research
3. detailed curriculum vitae
4. at most 3 first-authored, peer-reviewed publications
5. contact information for 3-5 referees in the academia