Postdoctoral Position in Biostatistics & Applied Mathematics

Title: Statistical characterization and validation of a Deep learning model for an automated chromosomal aberration detection

Start in : May/June 2023

Workplace : Institute for Radiological Protection and Nuclear Safety (IRSN)
Fontenay-aux-Roses, France.

Duration : 18 months

We are currently seeking to recruit a post-doctoral researcher at Department of Radiobiology and Regenerative Medicine of the Institute for Radiological Protection and Nuclear Safety (IRSN), Fontenay-aux-Roses, France.

Work environment: Institute for Radiological Protection and Nuclear Safety (IRSN)

IRSN is public expert, with industrial and commercial activities, in nuclear and radiation risks, and its activities cover all the related scientific and technical issues.The Institute is supervised jointly by the French Minister of the Ecological transition, the French Minister of Defense, and the French Ministers of Energy transition, Research and Health.

The Radiobiology of Accidental Exposure Laboratory (LRAcc) develops operational methods and tools used for the diagnosis and prognosis of radiation-induced organ damage. Among other things, it proposes dose assessment approaches based on radiation-induced damage based on radiation-induced damage in the a posteriori reconstitution of absorbed doses (biological dosimetry).

Work Context:

Following an accidental exposure to ionizing radiation, it is necessary to refine the evaluation of the received dose in order to carry out an accurate follow-up of asymptomatic victims. Among the techniques available for estimating the radiation dose, biological dosimetry performed on blood samples consists of counting chromosomal aberrations within circulating lymphocytes. This counting procedure is long and tedious, requiring trained biologists with a high level of expertise.

The global aim of the INCREASED project, funded by the French National Research Agency (ANR Astrid) in collaboration with French national research institute for digital science and technology (INRIA) and the Armed Forces Biomedical Research Institute (IRBA) is to develop and validate a fully automated chromosomal aberration detection algorithm based on the most recent advances in artificial intelligence and deep learning. This post-doc project will be especially focused in the statistical characterization and dosimetry validation of the computer vision algorithm developed in the first part of the project with the SERPICO project team Partner (INRIA Rennes).

Profile and duties

Applicants should have a PhD in Biostatistics or applied mathematics. Training in nonlinear / flexible generalized linear regression (GLM) modelling (splines for example) would be an asset, as well as previous experience in Bayesian and uncertainty analysis.

The selected candidate will work in close interdisciplinary collaboration with scientists having expertise in applied mathematics and radiobiology. The position includes leading statistical analysis and manuscript writing in collaboration with the research team. The selected candidate will be encouraged to present the findings of the project at scientific conferences as well as to administrative authorities.

Job offer

The start date is fixed from May/June 2023. The duration of the position is 18 months and it will be located at the Institute for Radiological Protection and Nuclear Safety (IRSN), Fontenay-aux-Roses, France. Salary will be based on qualifications and experience according to the IRSN salary grid. Applications will be considered until the position is filled.

Applicants are encouraged to submit their CV, a short research statement, at least one manuscript (published or unpublished) and the names of 2-3 reference persons.

Please send applications and potential enquiries to Mohamed Amine Benadjaoud (mohamedamine.benadjaoud@irsn.fr)