BRACCO FELLOWSHIPS - EDUCATION IN RESEARCH

Project 1:

Machine learning in cardiovascular CT and MRI

NAME OF INSTITUTION: Institute of Diagnostic and Interventional Radiology, University Hospital Zurich, Zurich/SWITZERLAND

RESEARCH GROUP AND ITS MISSION:
The fellow has the opportunity to perform research in the "Machine Learning and Big Data Analysis Group" at the University Hospital Zurich. The focus of research can be steered according to applicants’ interests and usually is focused on cardiovascular imaging. We apply state-of-the-art and advanced radiomics approaches including 3D texture, shape and color analysis on medical images (usually CT and/or MRI). For outcome analysis, we apply a variety of machine learning algorithms. The methodology is established in our department. No specific programming skills or prior knowledge in radiomics are required but are of course helpful. The final aim of this fellowship is an own publication as main or co-author.

OBJECTIVES:
• Apply 3D texture, shape and color analysis OR deep learning in CT/ MRI images of the heart (supervision and guidance provided)
• Extract information invisible to the Radiologists’ eyes
• Author an original publication published in a peer-reviewed journal

APPLICANT’S DUTIES:
  o Image selection
  o Region-of-Interest delineation and segmentation
  o Clinical correlation
  o Writing of manuscript (with help of the senior staff)

APPLICANT’S BENEFITS:
  o The ultimate goal is a scientific publication of an original manuscript
  o Learning of new state-of-the-art techniques/skills
- Daily clinical teaching (30 minutes) in our institute
- Established methodology
- In-house image postprocessing and statistical analysis

Project Leader: Prof. Hatem Alkadhi, MD, MPH, EBCR, FESER
Members: PD Dr. Bettina Baessler, MD