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Student Internship

Functional area : Biostatistics
Prerequisites : A Ph.D. candidate or MSc candidate in Statistics. Experience in R (preferred) and/or SAS

Internship proposal on Glioblastoma imaging data

Bristol Myers Squibb has conducted two large phase 3 studies on Phase 3 on glioblastoma, a disease with unfavorable prognosis especially in patients with unmethylated MGMT promoter (Chang et al. , 2006) . One study randomized 369 patients with recurrent glioblastoma to two treatment groups. The second study randomized 560 patients with newly diagnosed glioblastoma to two treatment groups.

Shaver et al. (2019) review the current applications of machine learning methodologies and especially on deep learning and convolutional neural networks on image recognition of from brain tumors images. They conclude their review stating that the further development of deep learning algorithms in such data "may help open opportunities for enhanced patient care and outcomes".

Both databases include a wealth of clinical information as well of imaging data.

The purpose of this internship will be to implement machine learning methodologies in order explore how the imaging data are associated with clinical endpoints such as survival time, disease progression and tumor responses, taking into account the clinical information.

This internship will provide the candidate the opportunity to:

- work on real life data collected from two large phase 3 glioblastoma trials
- gain further experience in applying machine learning methodologies to image recognition for the tumor characterization on glioblastoma tumors
- explore methodologies leveraging information from the clinical database in addition to the imaging data
- collaborate in an international multicultural environment of a pharmaceutical company
- potential publication

Skills/Knowledge Required (technical and soft skills)

- Experience with Machine Learning and especially Deep Learning methodologies and neural networks in R or Python.
- Experience with clinical trials (survival analysis, oncology) preferred.

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Other relevant items:

Full-time internships are available and will last 4 to 6 months according to the university/school requirements and the study project. Part-time internship is possible when the student should continue to attend some courses during the internship period. This should be agreed with the intern supervisor. Starting and ending dates are flexible. Successful candidates will work closely with a senior-level statistician on statistical methodology and/or application topics related to the design and analysis of clinical trials and/or observational studies on a variety of therapeutic areas.

Successful candidates must have effective oral and written communication skills and good working knowledge of SAS and/or R and/or Python.

Additional Requirements:
Be authorized to work either in Switzerland.
Must not be employed at the time the internship starts.

To apply, send a résumé with a cover letter to the contact below.
Contact: Marie-Laure Casadebaig, Marie-Laure.Casadebaig@bms.com, +41 32 729 68 11

References

Shaver, M.M., Kohanteb, P.A., Chiou, C., Bardis, M.D., Chantaduly, C., Bota, D., Filippi, C.G., Weinberg, B., Grinband, J., Chow, D.S. and Chang, P.D., 2019. Optimizing Neuro-Oncology Imaging: A Review of Deep Learning Approaches for Glioma Imaging. Cancers, 11(6), p.829.

Chang, S.M., Butowski, N.A., Sneed, P.K. and Garner, I.V., 2006. Standard treatment and experimental targeted drug therapy for recurrent glioblastoma multiforme. Neurosurgical focus, 20(4), pp.E4-E4.