Offer:

We are developing and comparing methods to understand possible **restrictions in the order of accumulation of driver mutations in cancer**, using oncogenetic trees and related approaches, and evaluating them using explicit evolutionary models of tumor progression.

The basic workflow in this work involves implementing/extending simulations of evolutionary models of cancer progression and evaluating the performance of methods to reconstruct the restrictions, as well as understanding the consequences that different evolutionary models can have for different methods of inference and for the types and patterns of data we observe. This **project is therefore completely computational and statistical.**

Your work would involve implementing and studying the consequences of different evolutionary models of tumor progression and/or analyzing data (mainly data simulated by us from known evolutionary models and fitness landscapes, but possibly also "real" data from the literature).

References:

Diaz-Uriarte, R. 2015. Identifying restrictions in the order of accumulation of mutations during tumor progression: effects of passengers, evolutionary models, and sampling. BMC Bioinformatics. http://www.biomedcentral.com/1471-2105/16/41/abstract

Diaz-Uriarte, R. 2016. OncoSimulR: genetic simulation of cancer progression with arbitrary epistasis and mutator genes. bioRxiv http://dx.doi.org/10.1101/069500.

OncoSimul package repository: https://github.com/rdiaz02/OncoSimul

Requirements:

- Working knowledge of Linux/Unix
- Depending on the specifics of the project:
  - Good working knowledge of R (your R knowledge should be at or above that covered in R. Peng's "R programming for data science" and, ideally, you should be familiar with most of in H. Wickham's "Advanced R programmin").
  - Knowledge of C++
  - Knowledge of Julia
- Having taken a look at the "References" to make sure you are really interested. `:-)`)

(The above are not "hard requirements", so talk to me if you are very interested in the project but you feel that currently you do not fulfill the requirements.)

Contact

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