Assignment #1

APA - Master in Bioinformatics for Health Sciences

September 27th, 2019

Gaining practical insights to computational complexity

This assignment consists of two parts, where you are expected to *(i)* plot the values of certain functions as increasing sizes of n and *(ii)* to analyze the computational complexity of an algorithm (pseudocode) of choice from an article in Bioinformatics or BMC Bioinformatics journals.

Task 1: Visualization of common functional families

- Plot the values of the following functions as increasing sizes of n using *python matplotlib*:

$n!$	factorial
2^n	exponential
n^2	quadratic
n	linear
$\sqrt{n}$	root-n
$\log(n)$	logarithmic

- Upload your code to *GitHub* (create an account if you do not have one).

Task 2: Computational complexity analysis

- Chose an article from the Bioinformatics or BMC Bioinformatics journal that contains pseudocode of an algorithm.

- Analyze the computational complexity of the algorithm and report your estimate on the asymptotic upper bound of the method for large input size.

Deadline and submission instructions

Send both the link of the repository and your analysis of the algorithm via email to emre.guney@upf.edu before the next class on October 1st.