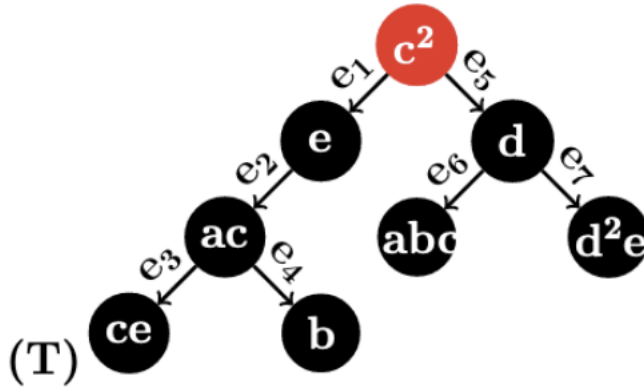


Some notes on the computer program used to compute the k-RF scores for labeled trees

The computer program used to compute pairwise k-RF measures of all labeled (rooted) trees in an input text file, can be found in “k-RFmeasures.py”. The code utilizes some functions defined in “functions.py” and has two propositional arguments “inputfile” and “k”. By default, the program considers trees as unrooted; however, adding the optional argument “-r” or “--rooted” in the command line, changes the default. Therefore, the command lines “python3 k-RFmeasures.py inputfile k” and “python3 k-RFmeasures.py -r inputfile k” are used to compute pairwise k-RF measures of all labeled trees and all labeled rooted trees, respectively.

As mentioned above, an input file is one of the propositional arguments of the program. To prepare the file, one needs to represent each (rooted) tree by its (directed) edges in separate lines and begin the representation by the phrase “tree (tree name)”. The edges need to be written in a special format as shown for the rooted tree T in the below figure (the format for unrooted trees is similar to rooted trees). Some input file examples are “rooted.txt” and “unrooted.txt”, which can be found in the GitHub link.



tree T

$v_0 : c, c \quad v_1 : e$

$v_1 : e \quad v_2 : a, c$

$v_2 : a, c \quad v_3 : c, e$

$v_2 : a, c \quad v_4 : b$

$v_0 : c, c \quad v_5 : d$

$v_5 : d \quad v_6 : a, b, c$

$v_5 : d \quad v_7 : d, d, e$

As illustrated above, each edge $e = (u, v)$ is represented by the phrase “u:list of u’s labels v:list of v’s labels” in one row.

Note that in the above figure, the list of u 's labels is followed by an space. In addition, for each labeled tree, labels of each node need to be listed in a fixed order throughout the representation of all edges. More precisely, if the node v is labeled by ab^2c , we first fix an order on $\{a, b, c\}$, such as $a < b < c$ and then represent the node's labels with the order as a, b, b, c in all edges with the node.