

Introduction

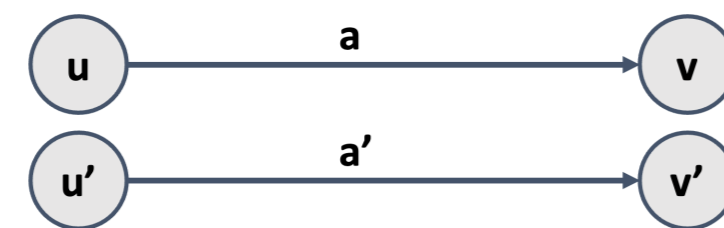
- Generalization of the **Burrows-Wheeler-Transform-based FM Index**.
- nodes can be **ordered based on the co-lexicographical order** of the sets of strings formed by all paths leading into the nodes.
- Generalization of other graph- and tree-shaped structures: **tries**, **De Bruijn graphs**, and **reverse deterministic graphs**

Wheeler Graph

Definition

1. Node with indegree 0 comes before every other nodes.

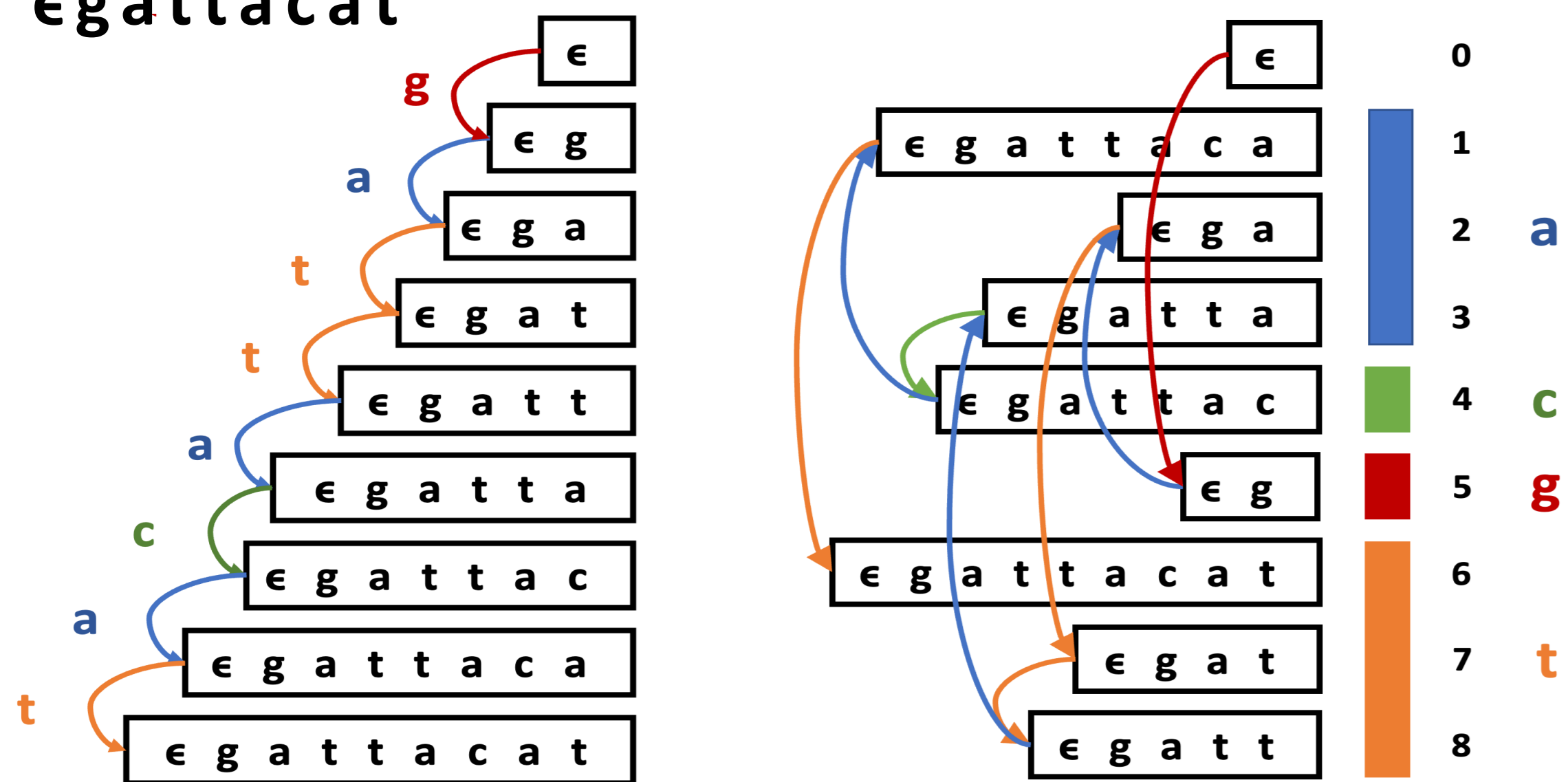
$$a < a' \implies v < v'$$



$$(a = a') \wedge (u < u') \implies v \leq v'$$

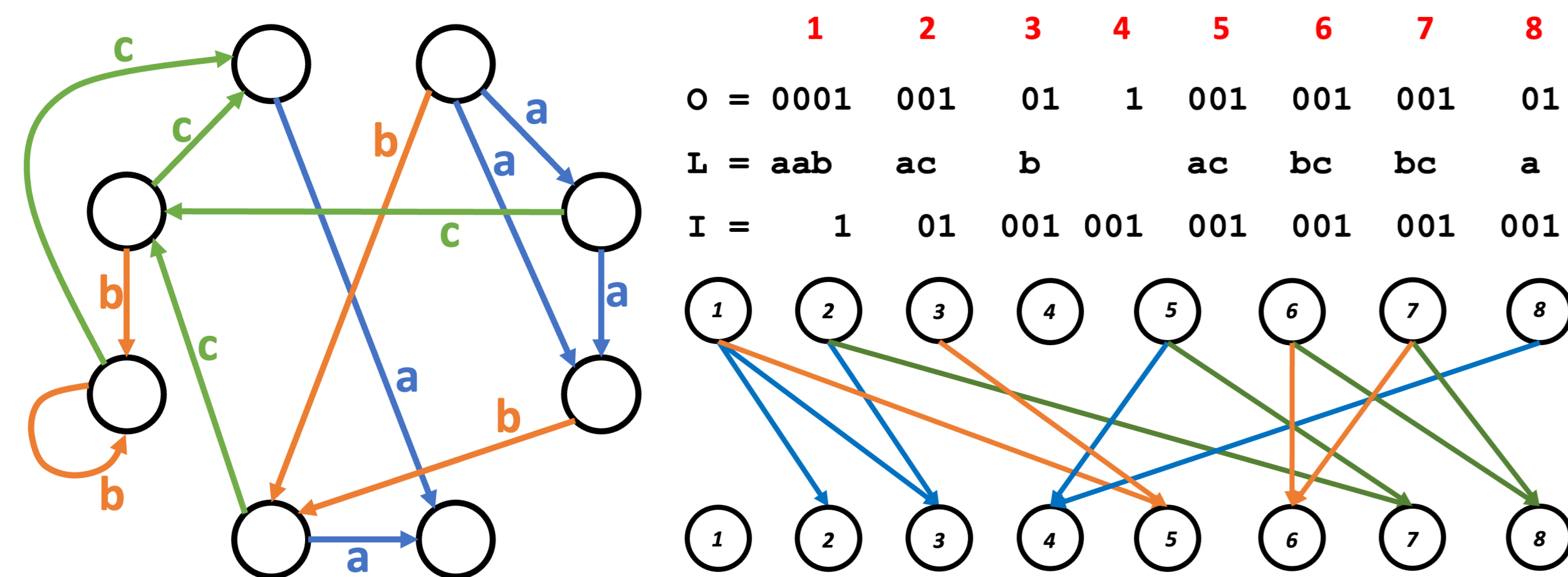
Sequence in Wheeler Graph

T : $\epsilon g a t t a c a t$

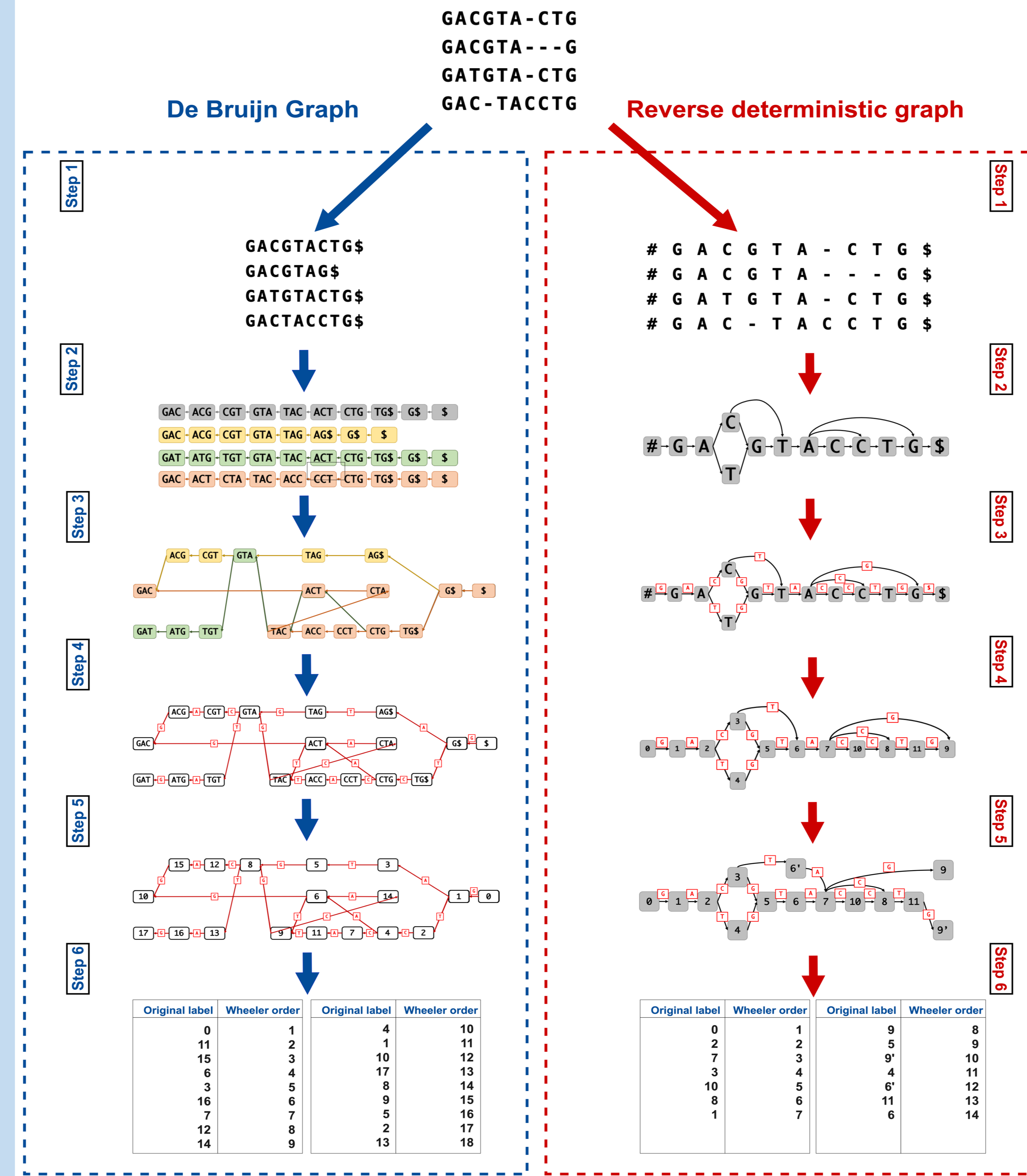


Wheeler Graph Recognition Problem

Given an edge-labelled graph, is it a Wheeler graph?

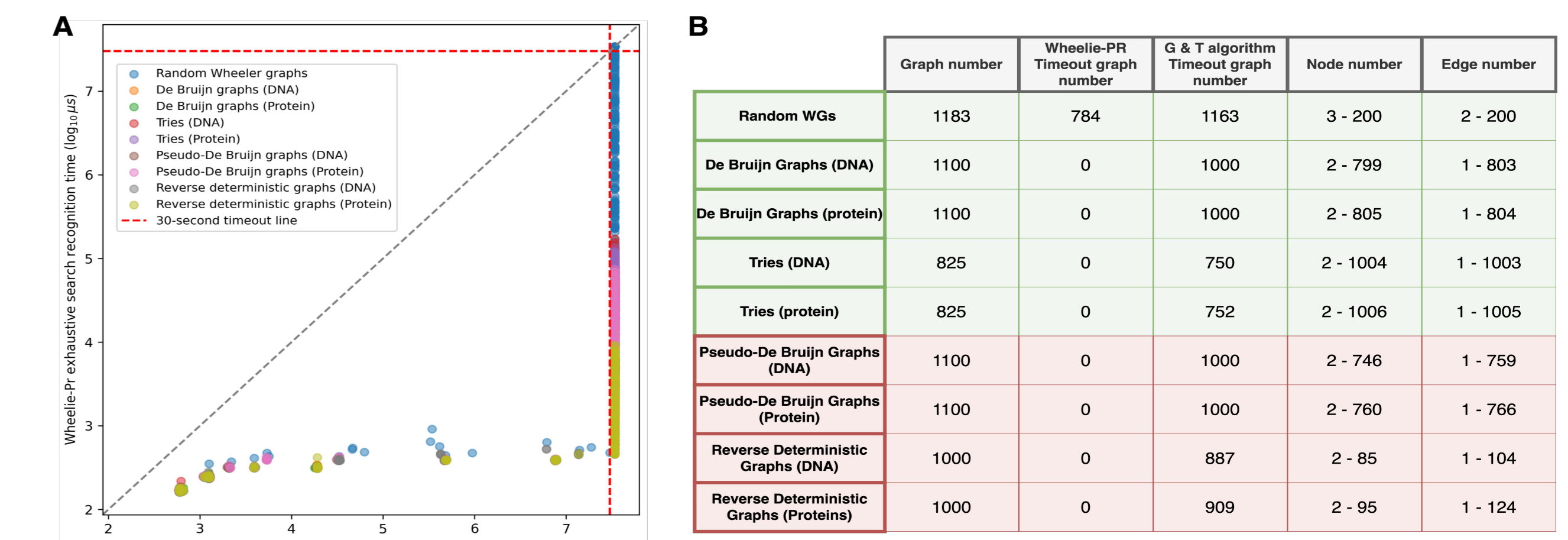


Potential Application

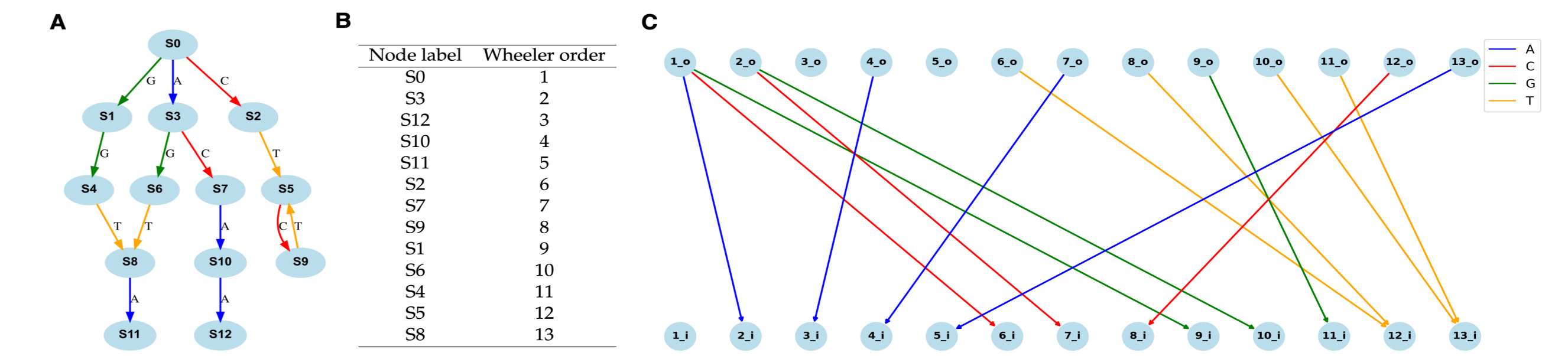


Results

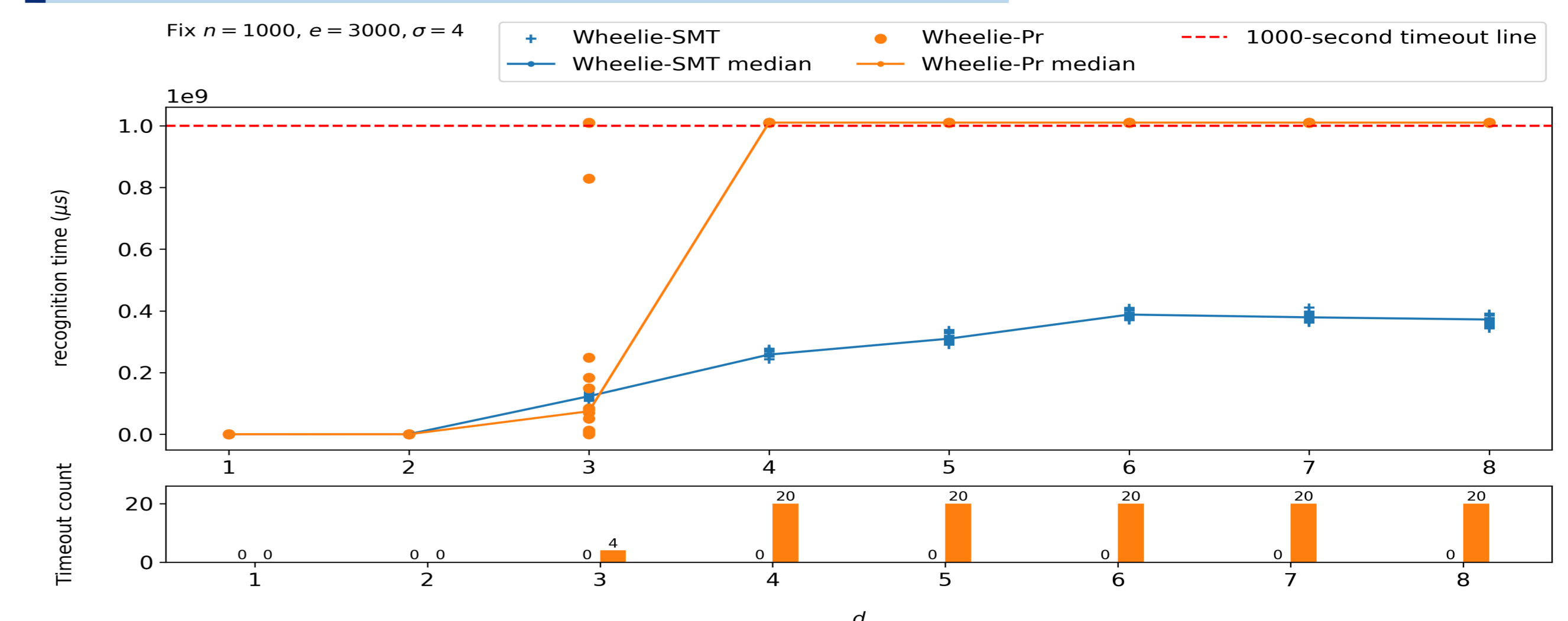
Wheeler-PR vs G & T's algorithm



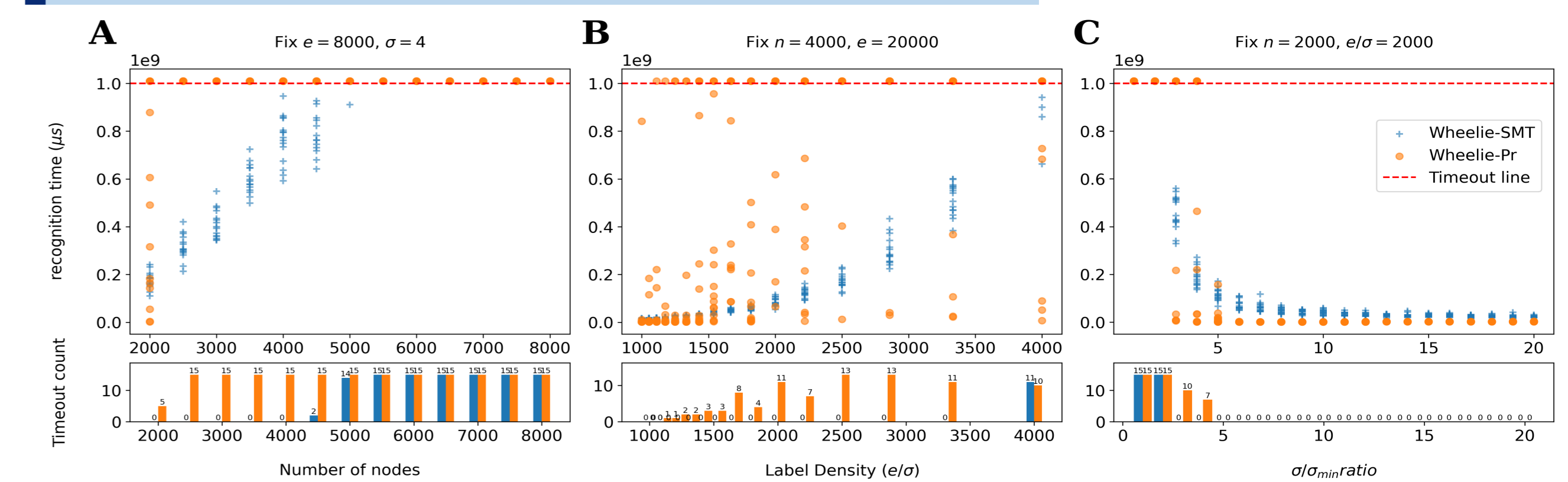
De Bruijn graph in Wheeler order



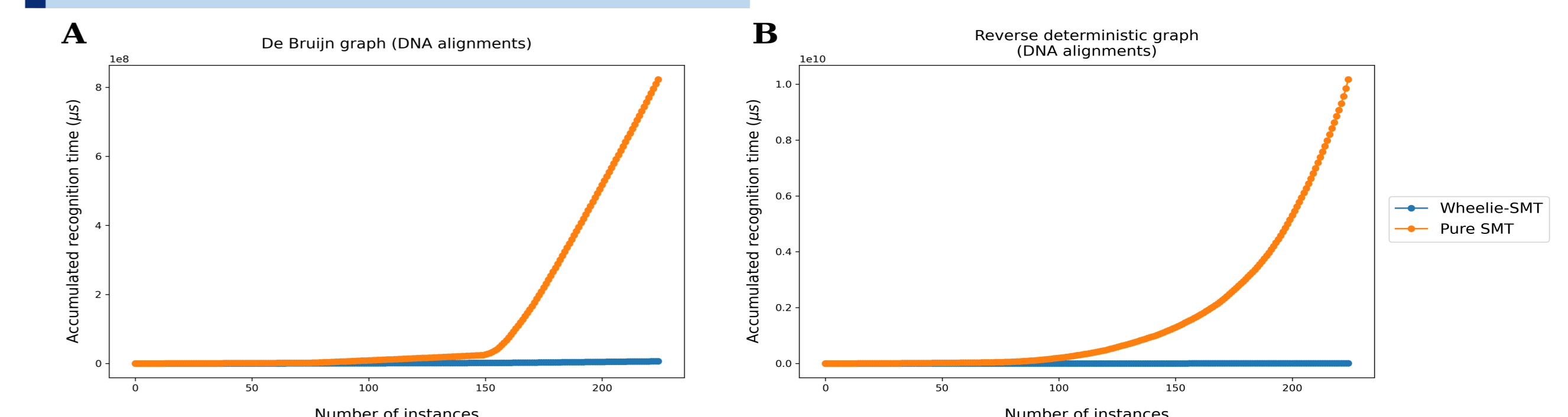
Wheeler-PR vs Wheeler-SMT (d -NFA)



Wheeler-PR vs Wheeler-SMT ($e/n/\sigma$)



Wheeler-SMT vs Pure SMT



Wheeler: Recognition algorithm

