GOETHE UNIVERSITÄT FRANKFURT AM MAIN

Assembly of long, error-prone reads using repeat graphs

Mikhail Kolmogorov, Jeffrey Yuan, Yu Lin and Pavel A. Pevzner

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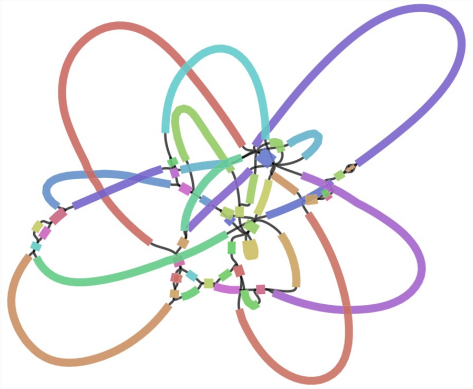
Presented by: Johannes Hausmann, Luis Kress

Background

- Assembly: reconstruct target sequence from the reads
- Different assemblers, different graph structures
- Repeats $\rightarrow$ assembly fragmentation



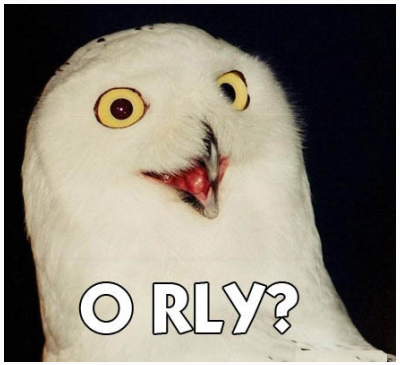
Tangled assembly graph of *E.coli* [2]

- Small differences between repeat copies $\rightarrow$ hard to resolve with error-prone reads

Disjointigs

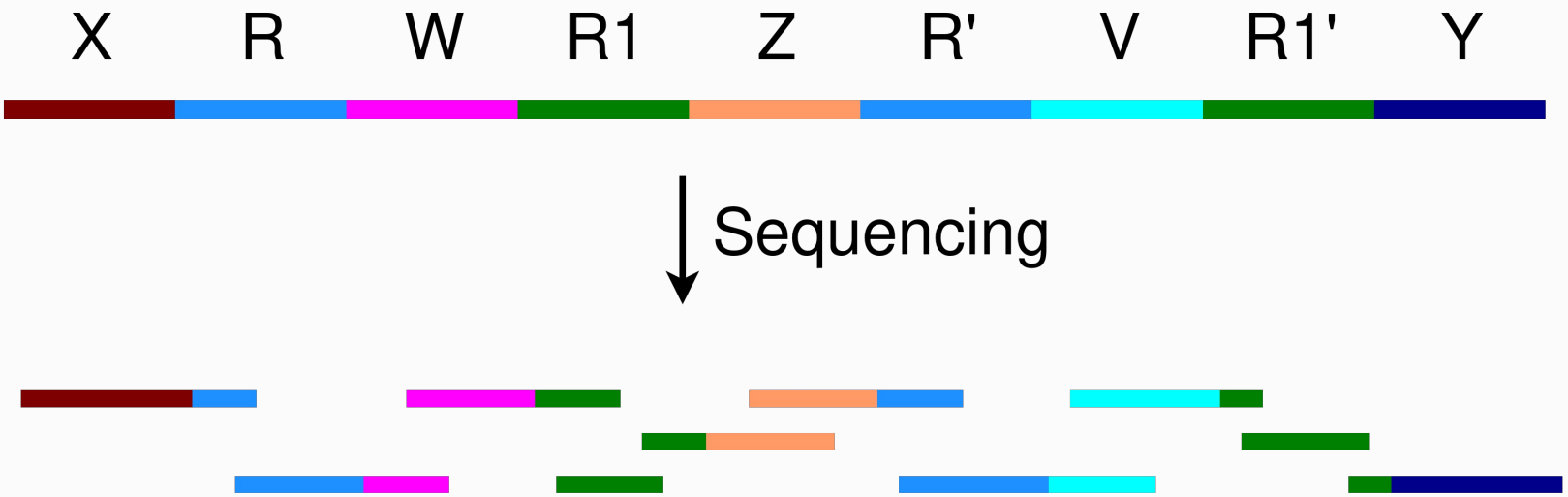
- Most assemblers spend much time on correct contig assembly
- Flye uses a different approach:
  - we don't care about the correct contig assembly

    $\rightarrow$ at least at the initial stage

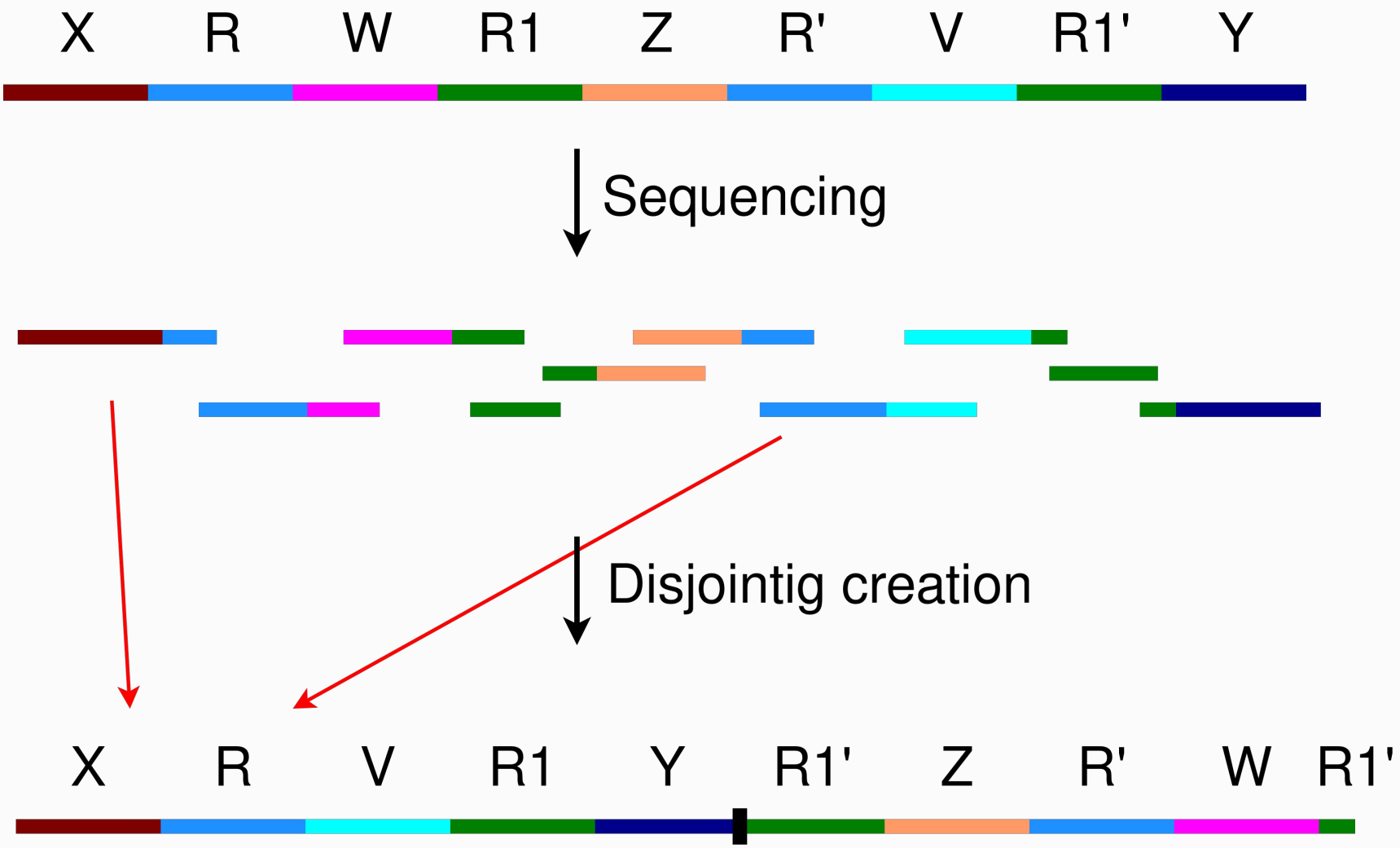


- Generate arbitary paths from overlapping reads $\rightarrow$ Disjointigs

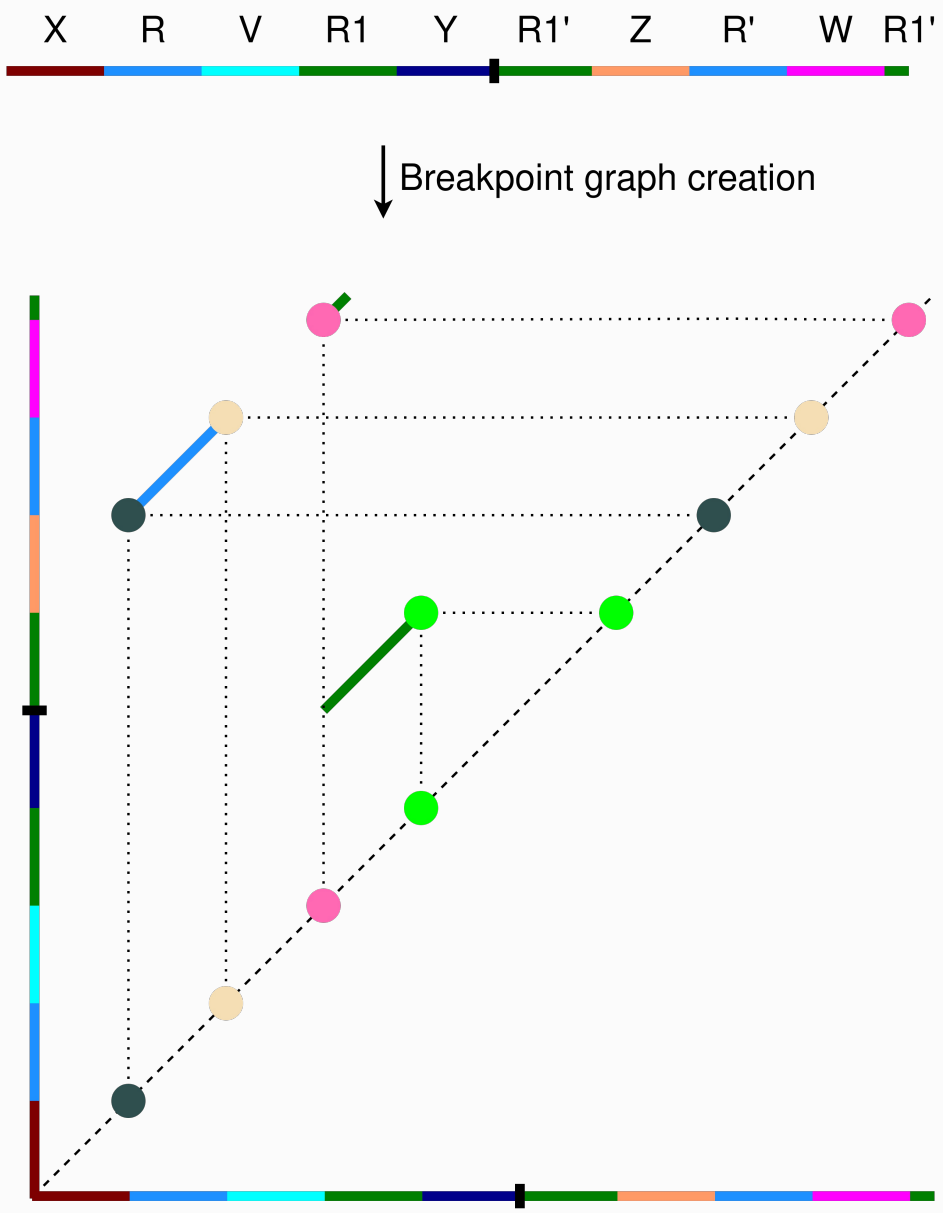
Repeat Graph Creation



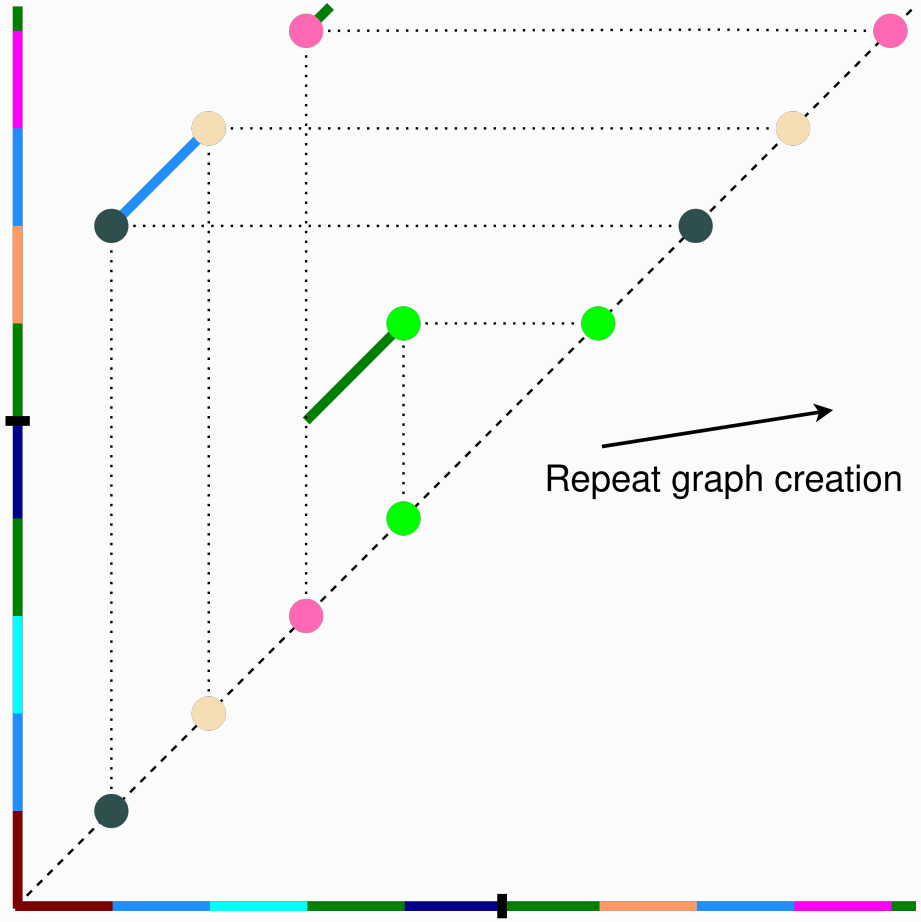
Repeat Graph Creation



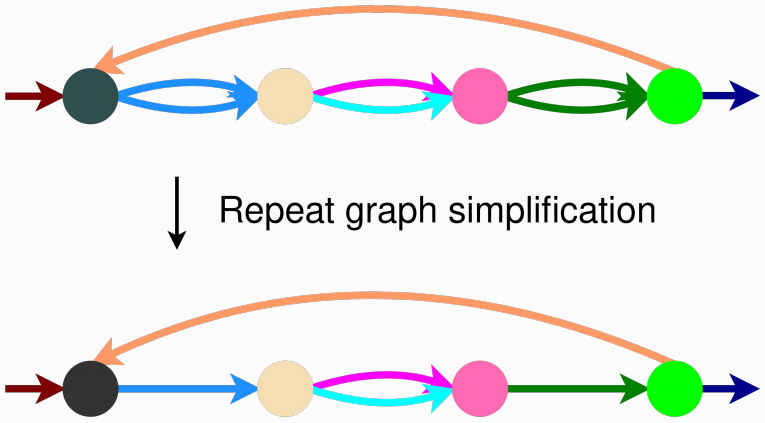
Repeat Graph Creation



Repeat Graph Creation



Repeat graph creation



Repeat graph simplification

Results

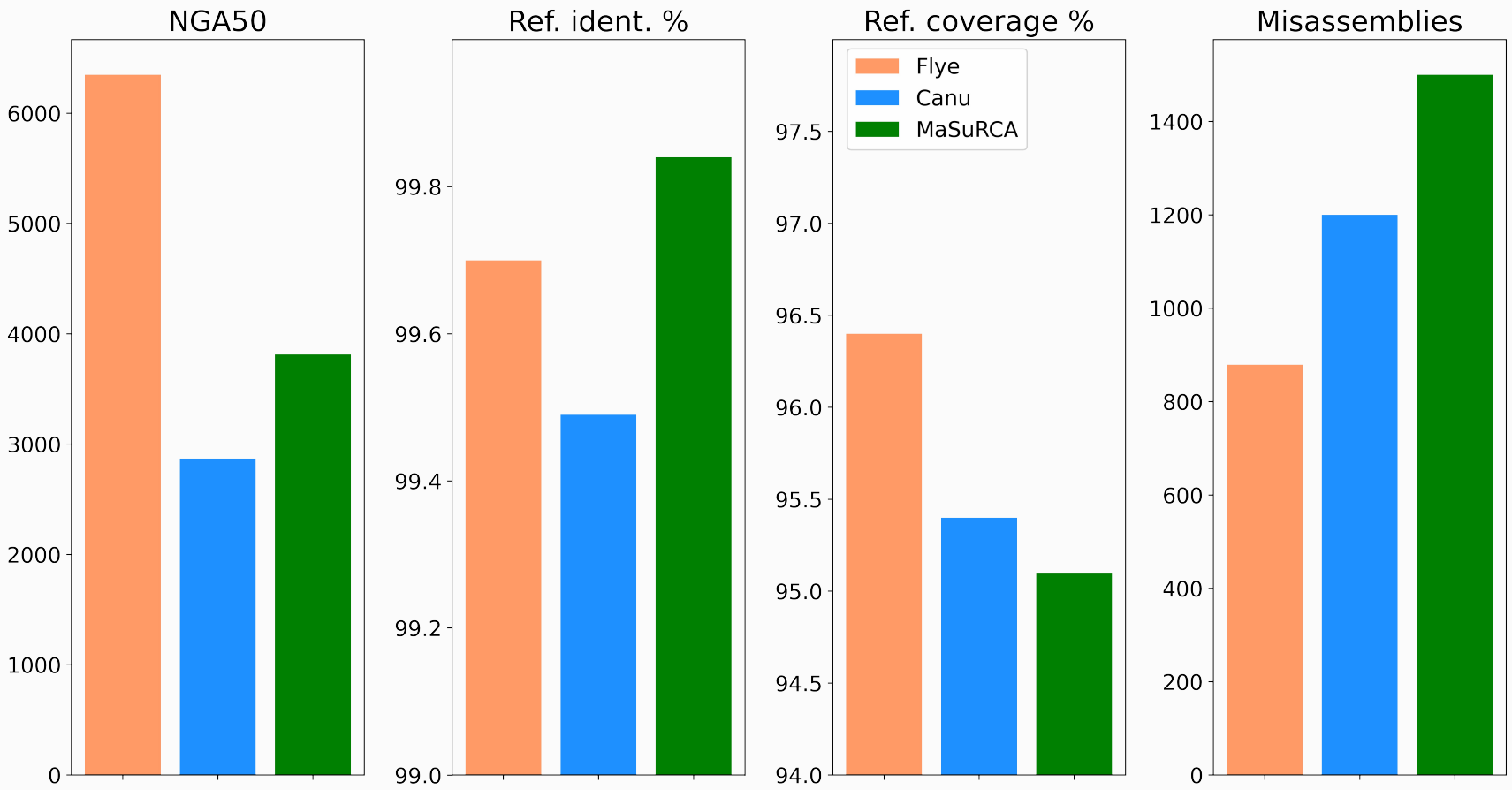


Figure 1: Results for HUMAN testset

Git (presentation and poster)

https://github.com/LKress/ASA

References i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