Destabilize the page ranks

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Project

- Analyze stability of of page ranking algorithms in directed graphs
- HITS, InDegree, PageRank
- What is the largest change you can cause in rank vectors when causing change in the graph?
- What are the most vulnerable graphs you found per algorithm?
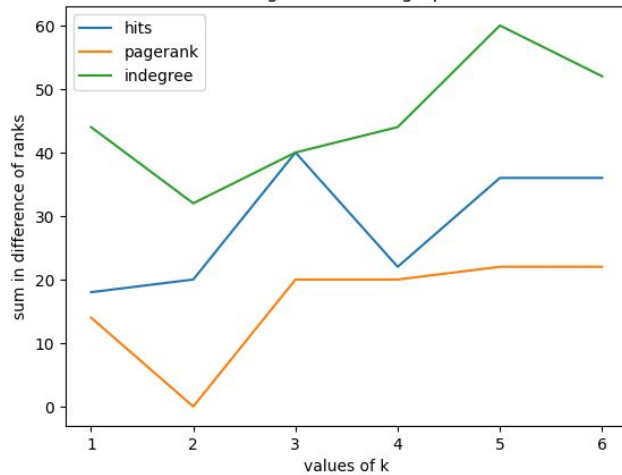- Which algorithm is the most stable?

Implementation

- Google colab
- Ranking algorithms from week 2
- Sum of difference of ranks, max rank change
- For a given graph:
    - Loop from 1 to a size of k
    - Per algorithm:
        - Calculate the change graph 3 times and take the average scores
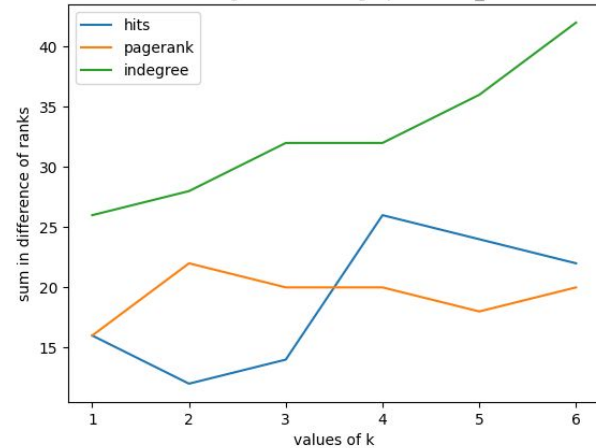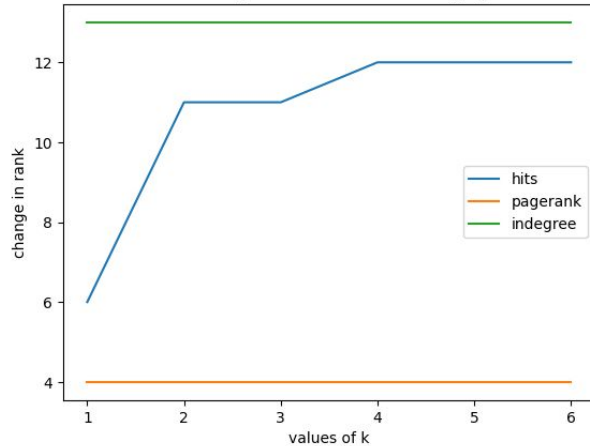   - Compare with original ranks
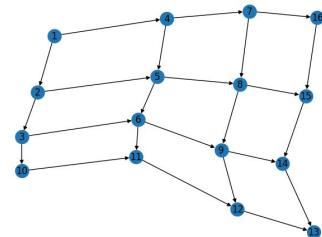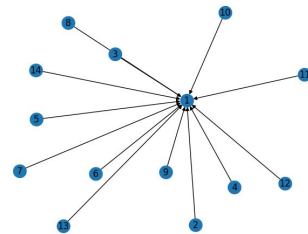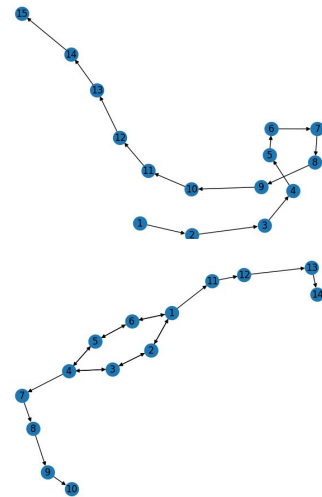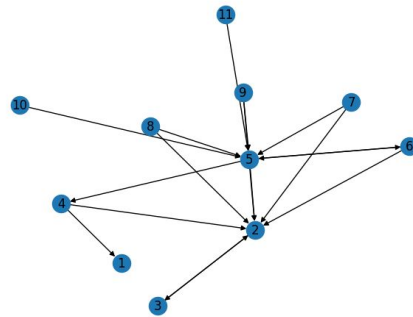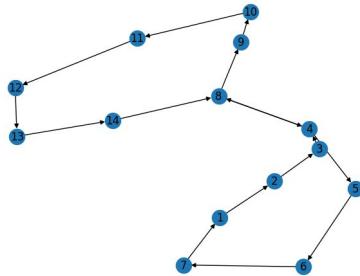
Results
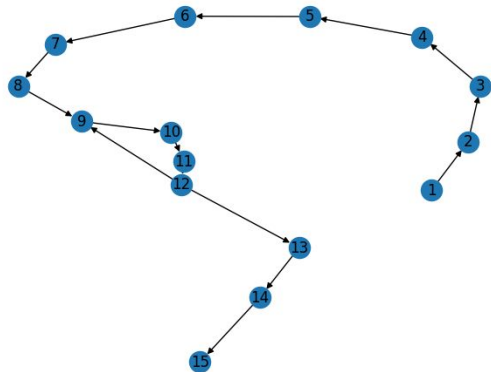
Conclusion

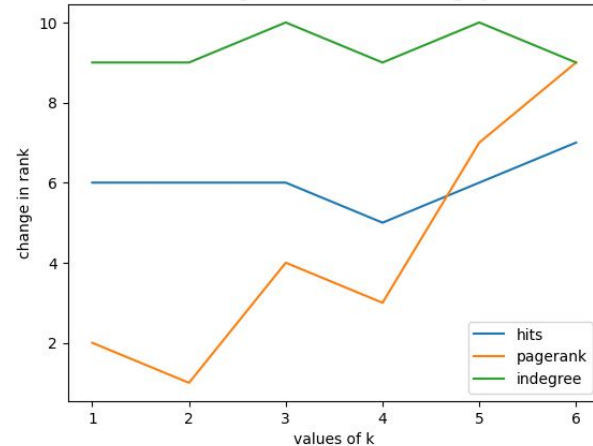- Largest change in rank vector
    - InDegree stable at 13
    - HITS varies from 7-13
    - PageRank varies from 8-10
    - Arrow graph, Inward Star graph
- Graph vulnerability
    - Arrow most vulnerable, High Score least vulnerable
- Algorithm stableness
    - PageRank - HITS - InDegree