# Graph Drawing

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Algorithms for VSLI

1. Where (class topic) Global and detailed placement Force directed placement (class theory)
2. Our setup
3. Graph drawing
4. Initial position
5. Iterative process
6. Forces
7. Repulsive
8. Spring
9. Parallelism
10. Experiments modifying functions (forces)
11. Experiments scaling topology
12. Experiments convergence
13. Extensions (clustering, optimizations, details that we didn't have time to implement (but we liked), . . . )
14. Conclusion

# Initial positioning

$$A = \begin{pmatrix} 0 & 1 & 1 & 0 \\ 1 & 0 & 0 & 1 \\ 1 & 0 & 0 & 1 \\ 0 & 1 & 1 & 0 \end{pmatrix}$$

# Initial positioning

$$D = \begin{pmatrix} 2 & 0 & 0 & 0 \\ 0 & 2 & 0 & 0 \\ 0 & 0 & 2 & 0 \\ 0 & 0 & 0 & 2 \end{pmatrix}$$

# Initial positioning

Unnormalized Laplacian matrix associated with A

$$L = D - A = \begin{pmatrix} 2 & -1 & -1 & 0 \\ -1 & 2 & 0 & -1 \\ -1 & 0 & 2 & -1 \\ 0 & -1 & -1 & 2 \end{pmatrix}$$

# References


Chris Walshaw, *A multilevel algorithm for force-directed graph drawing*, International Symposium on Graph Drawing, Springer, 2000, pp. 171–182.