

Advanced Visualization with TikZ

Interactive Graphics in Academic Presentations

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January 6, 2026

Outline

Graph Theory with TikZ

Algorithm Visualization

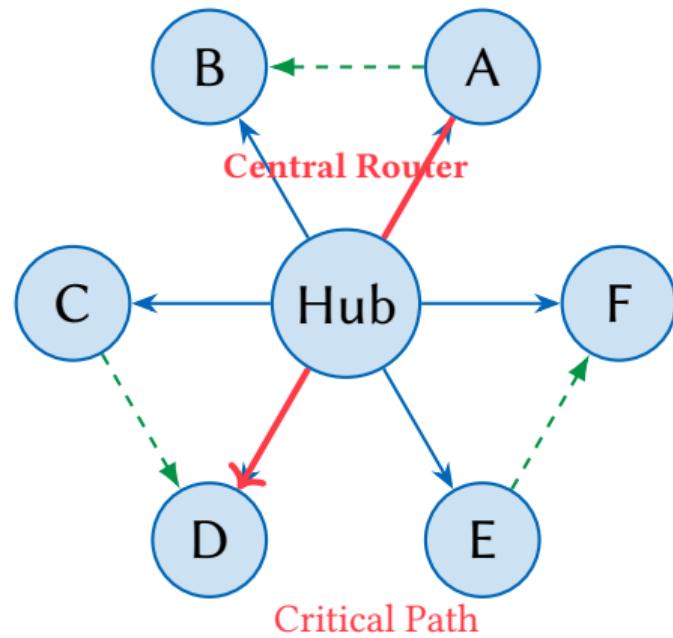
Data Visualization

Conceptual Diagrams

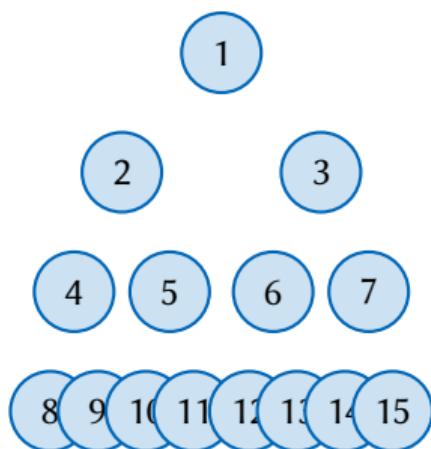
Advanced Features

Conclusion

Network Topology

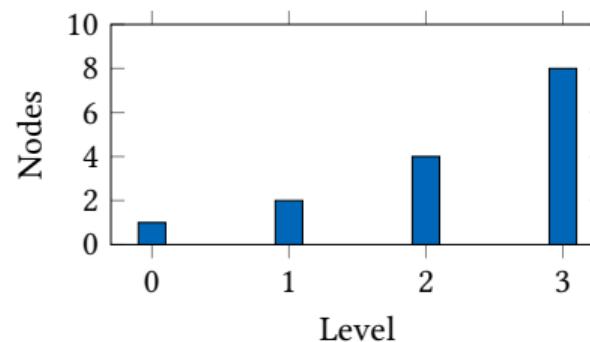


Binary Tree Structure

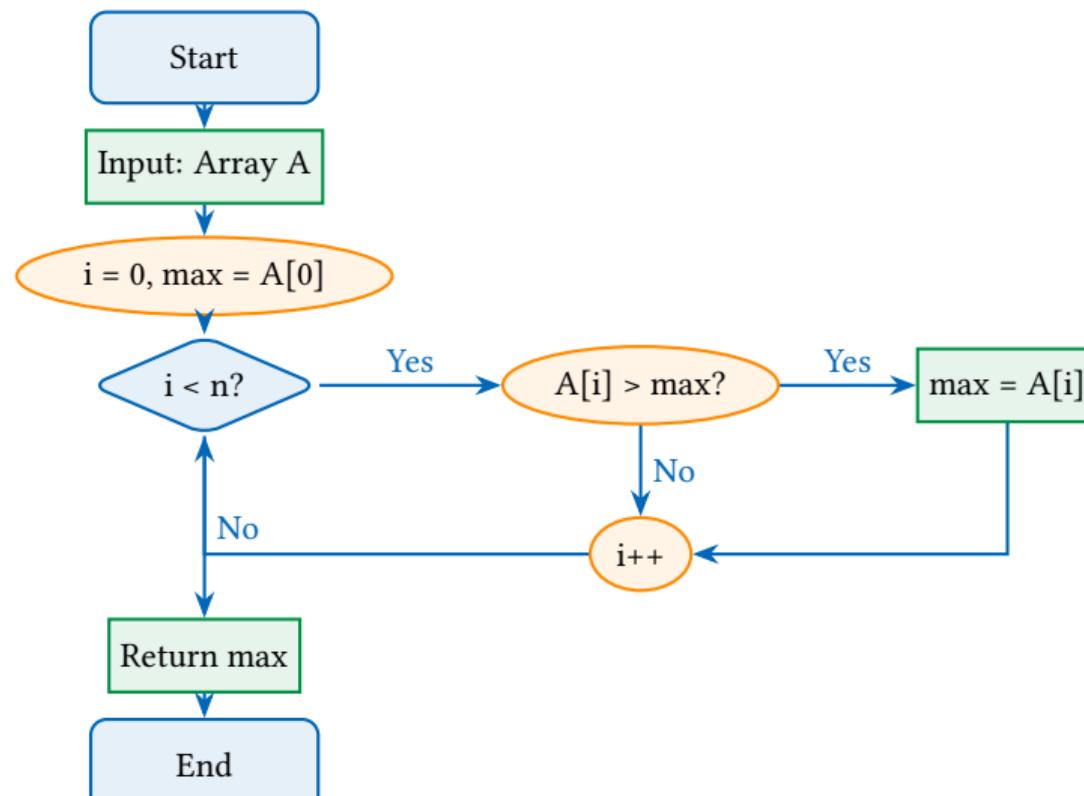


Tree Properties:

- ▶ Height: 3
- ▶ Nodes: 15
- ▶ Complete binary tree

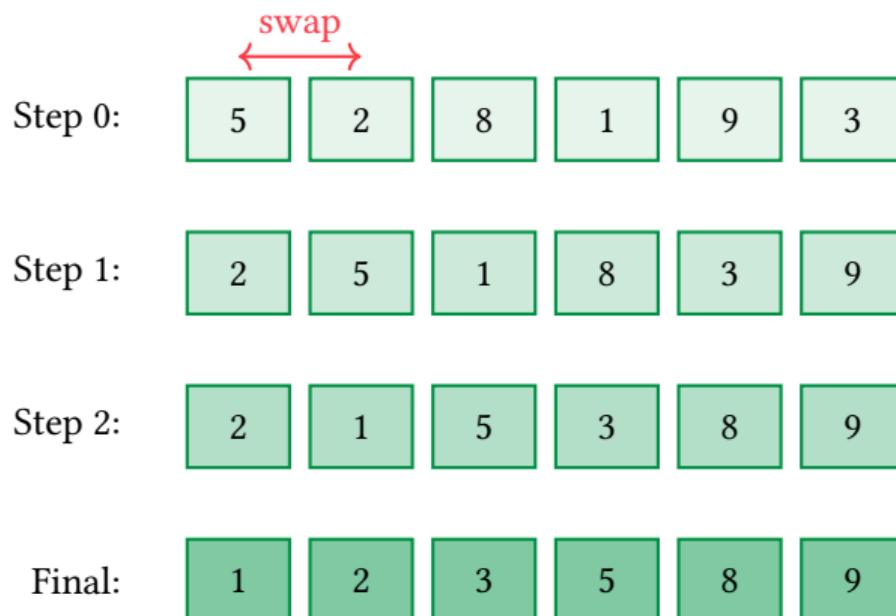


Algorithm Flowchart

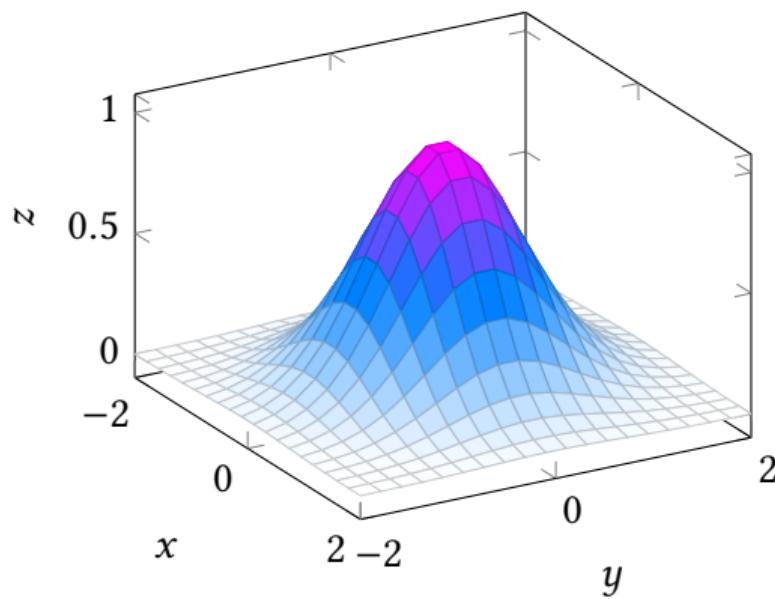


Sorting Algorithm Visualization

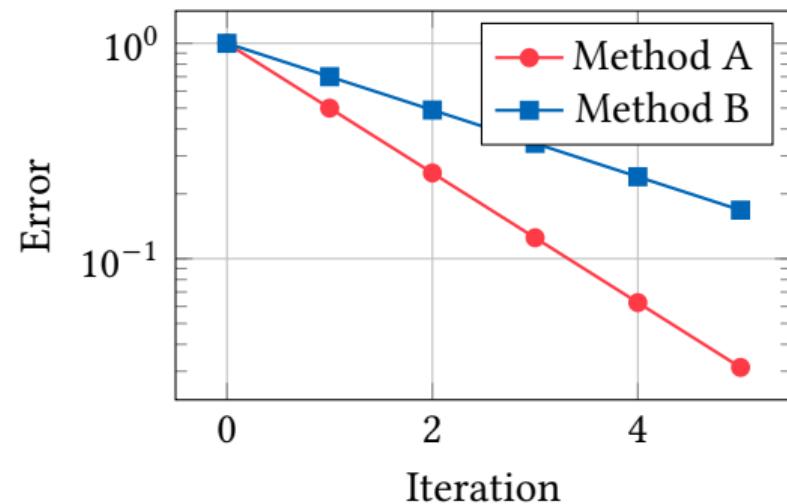
Bubble Sort Steps



3D Visualization

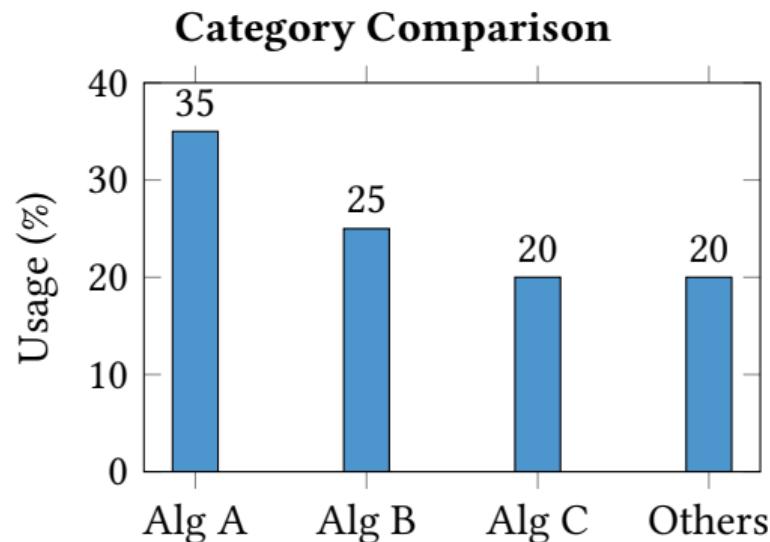
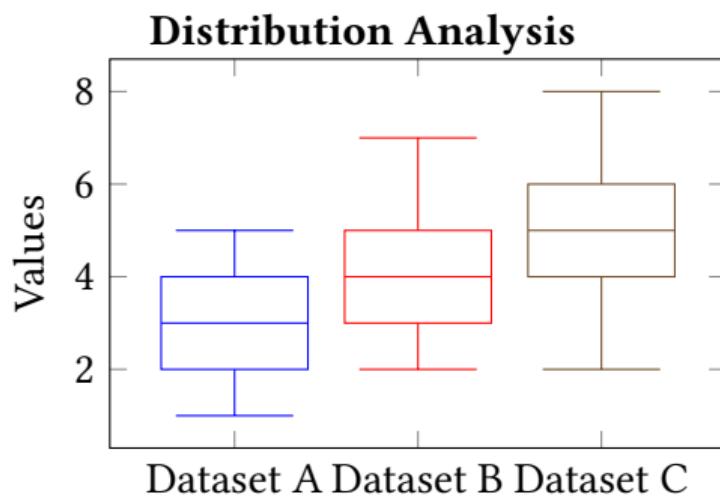


Gaussian Distribution

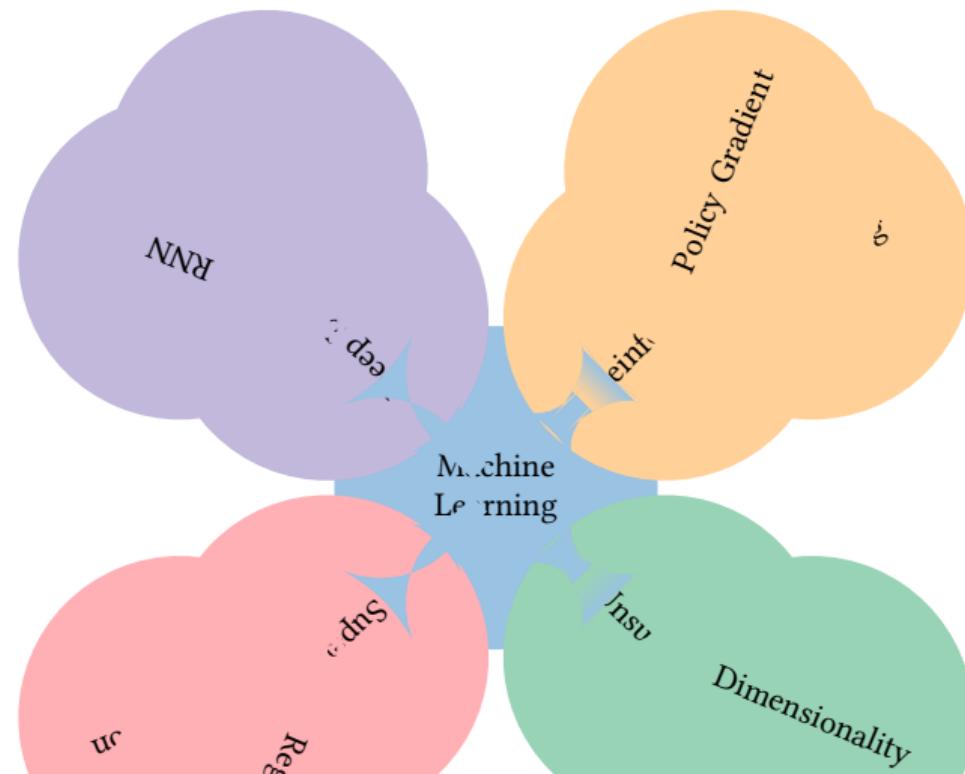


Convergence Analysis

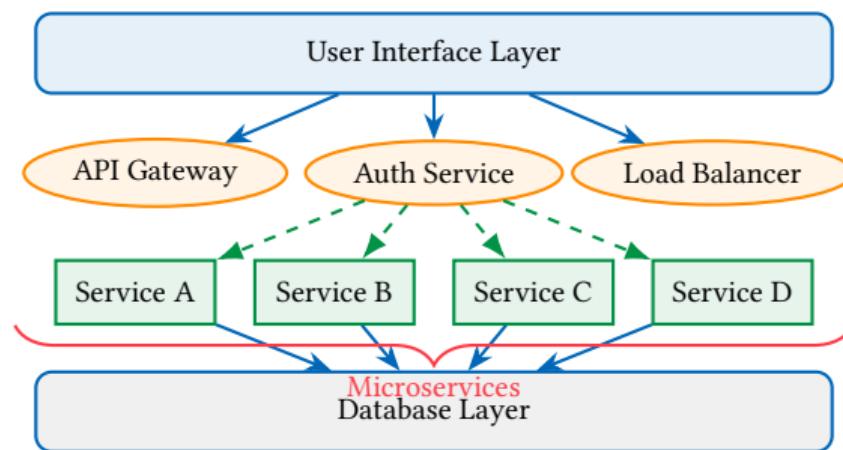
Statistical Charts



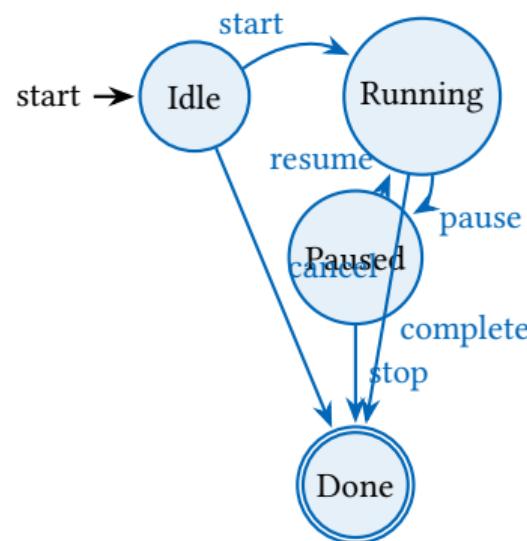
Mind Map



System Architecture



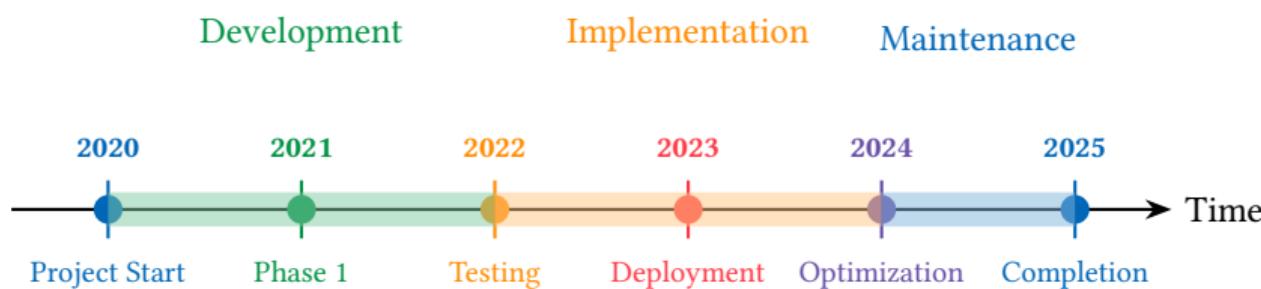
State Machine



State Transitions

Total states: 4, Total transitions: 6, Terminal state: Done

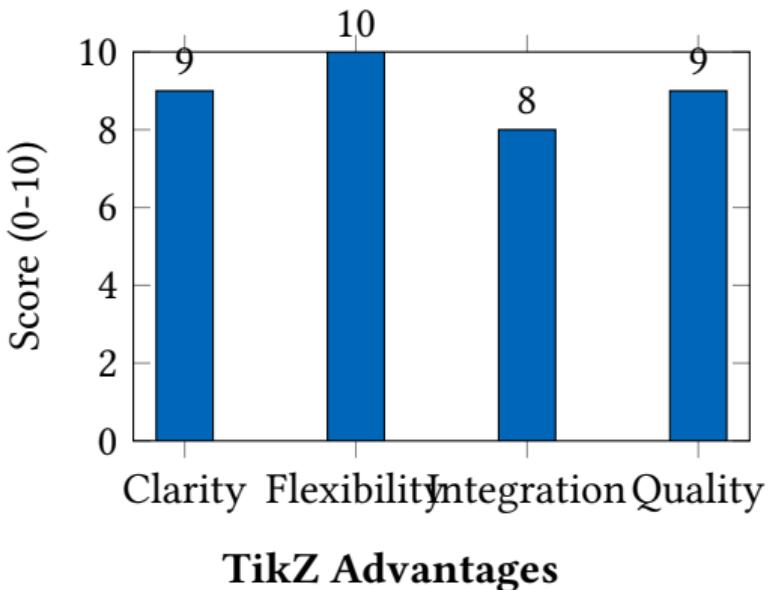
Timeline Visualization



Summary

TikZ Capabilities Demonstrated:

- ▶ Graph and tree structures
- ▶ Flowcharts and algorithms
- ▶ 3D visualizations
- ▶ Statistical charts
- ▶ Mind maps
- ▶ State machines
- ▶ Timeline graphics



Thank you for your attention!