Parallel & Distributed Computing: Lecture 22

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1. Graph Algorithms in the Language of Linear Algebra
2. The GraphBLAS Standard Effort
3. Julia Semiring HPEC2013 Paper

Graph Algorithms in the Language of Linear Algebra

GALLA book

1. Graphs and Matrices
2. Linear Algebraic Notation and Definitions
3. Connected Components and Minimum Paths
4. Some Graph Algorithms in an Array-Based Language
5. Fundamental Graph Algorithms
6. Complex Graph Algorithms
7. Multilinear Algebra for Analyzing Data with Multiple Linkages
8. Subgraph Detection
9. Kronecker Graphs
10. The Kronecker Theory of Power Law Graphs
11. Visualizing Large Kronecker Graphs
12. Large-Scale Network Analysis
13. Implementing Sparse Matrices for Graph Algorithms
14. New Ideas in Sparse Matrix Matrix Multiplication
15. Parallel Mapping of Sparse Computations
16. Fundamental Questions in the Analysis of Large Graphs

GALLA book

Graph Algorithms in the Language of Linear Algebra

The GraphBLAS Standard Effort

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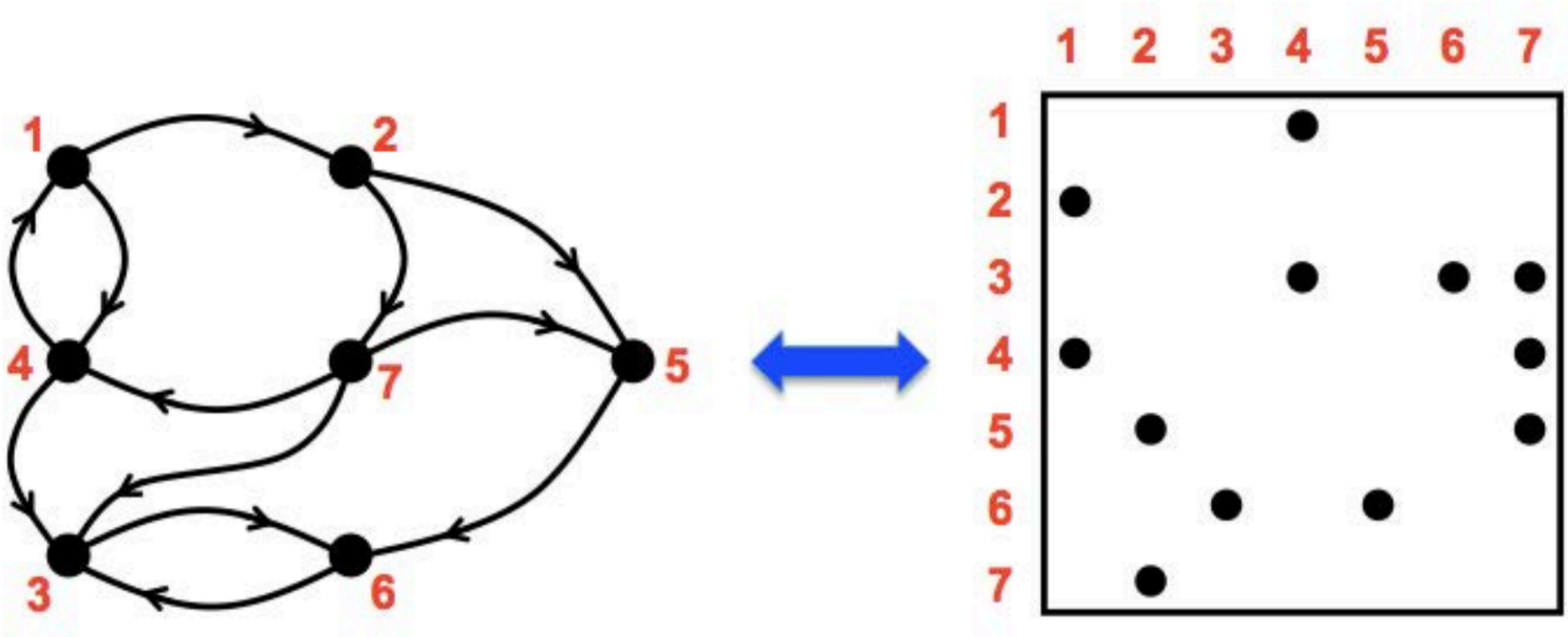

Figure 1: Graph adjacency matrix

incidence and adjacency graph matrix

```
[
[4,1],
[1,4],
[4,3],
[1,2],
[7,4],
[7,3],
[3,6],
[6,3],
[2,5],
[7,5],
[5,6]
]
```

```
[
[2,4],
[5,7],
[6],
[1,3],
[6],
[3],
[3,4,5]
]
```

bbbb

```
julia> hcat(A...)
2×11 Array{Int64,2}:
 4  1  4  1  7  7  3  6  2  7  5          ???
 1  4  3  2  4  3  6  3  5  5  6
```

Julia Semiring HPEC2013 Paper

Julia Semiring HPEC2013

Julia Semiring HPEC2013