

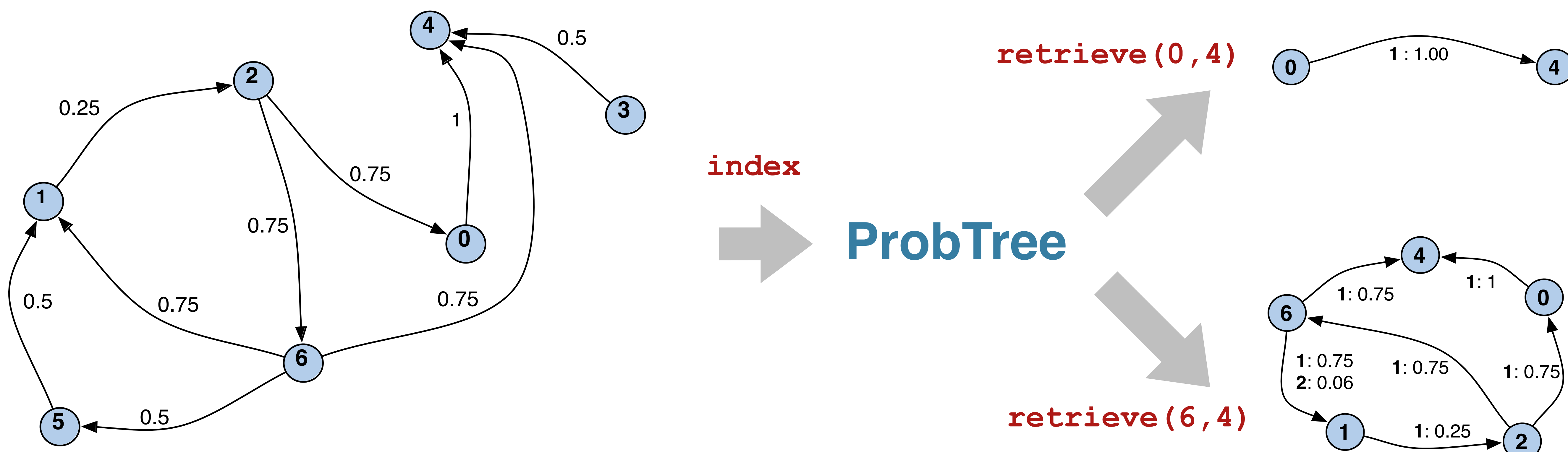
ProbTree: A Query-Efficient Representation of Probabilistic Graphs



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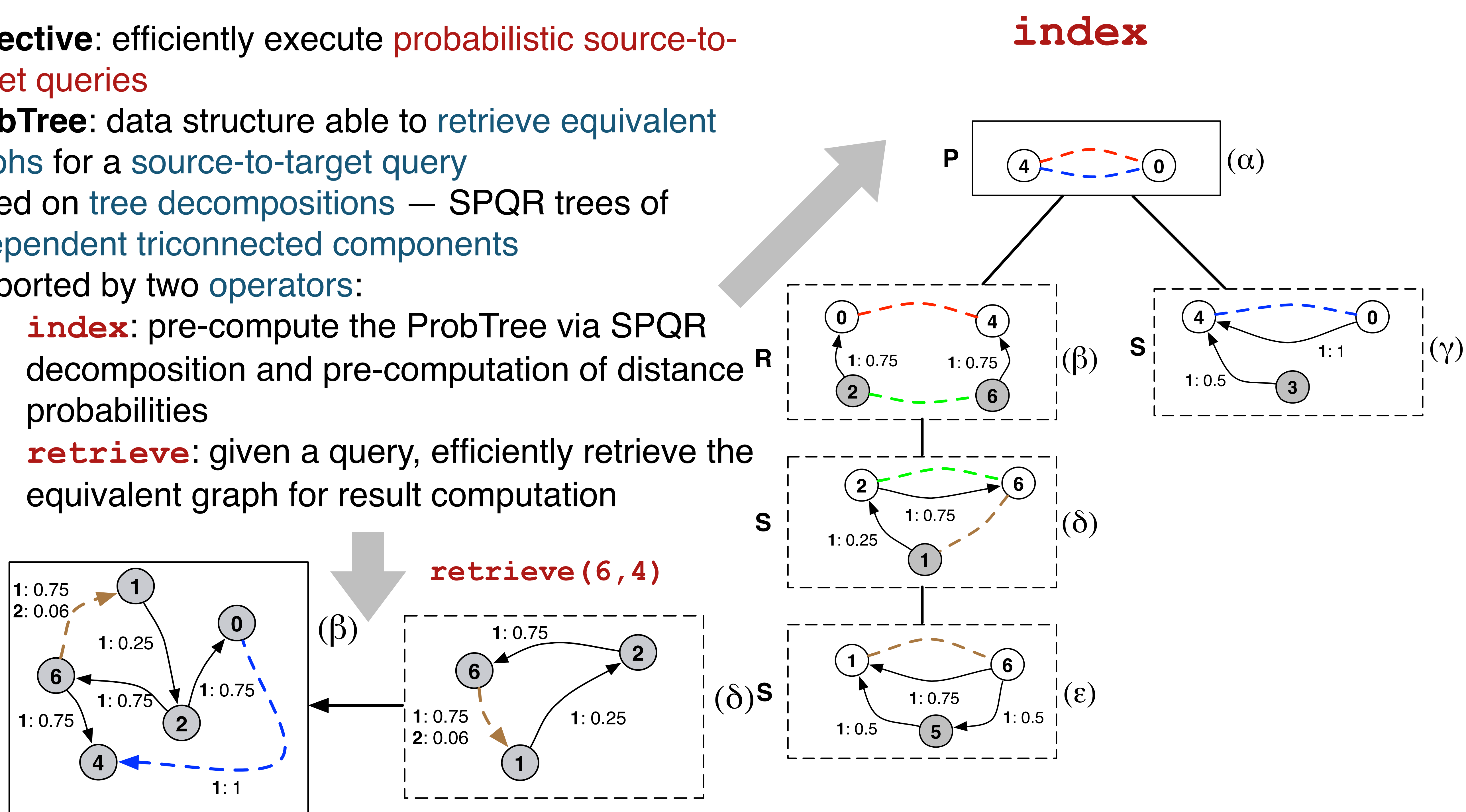


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ProbTree Data Structure

- **Objective:** efficiently execute **probabilistic source-to-target queries**
- **ProbTree:** data structure able to **retrieve equivalent graphs** for a **source-to-target query**
- based on **tree decompositions** — SPQR trees of **independent triconnected components**
- supported by two **operators**:
 1. **index:** pre-compute the ProbTree via SPQR decomposition and pre-computation of distance probabilities
 2. **retrieve:** given a query, efficiently retrieve the equivalent graph for result computation



Efficiency and Effectiveness

- **ProbTree** is **efficient** in retrieving equivalent graphs and computing source-to-target queries
- **ProbTree** is **effective** and can increase the accuracy of the query answers, needing **fewer samples** than other algorithms

