

Materialized View Selection for XQuery Workloads

Asterios Katsifodimos¹, Ioana Manolescu¹, Vasilis Vassalos²

¹INRIA Saclay & Université Paris-Sud, ²Athens University of Economics and Business

Given an XQuery workload, find a set of materialized views fitting a space budget and minimizing evaluation costs.

Contributions

- Novel view selection algorithms for XML query workloads
- Queries/views expressed in rich subset of XQuery
- Query rewritings based on multiple views
- View pruning techniques
- Extensive experimental evaluation

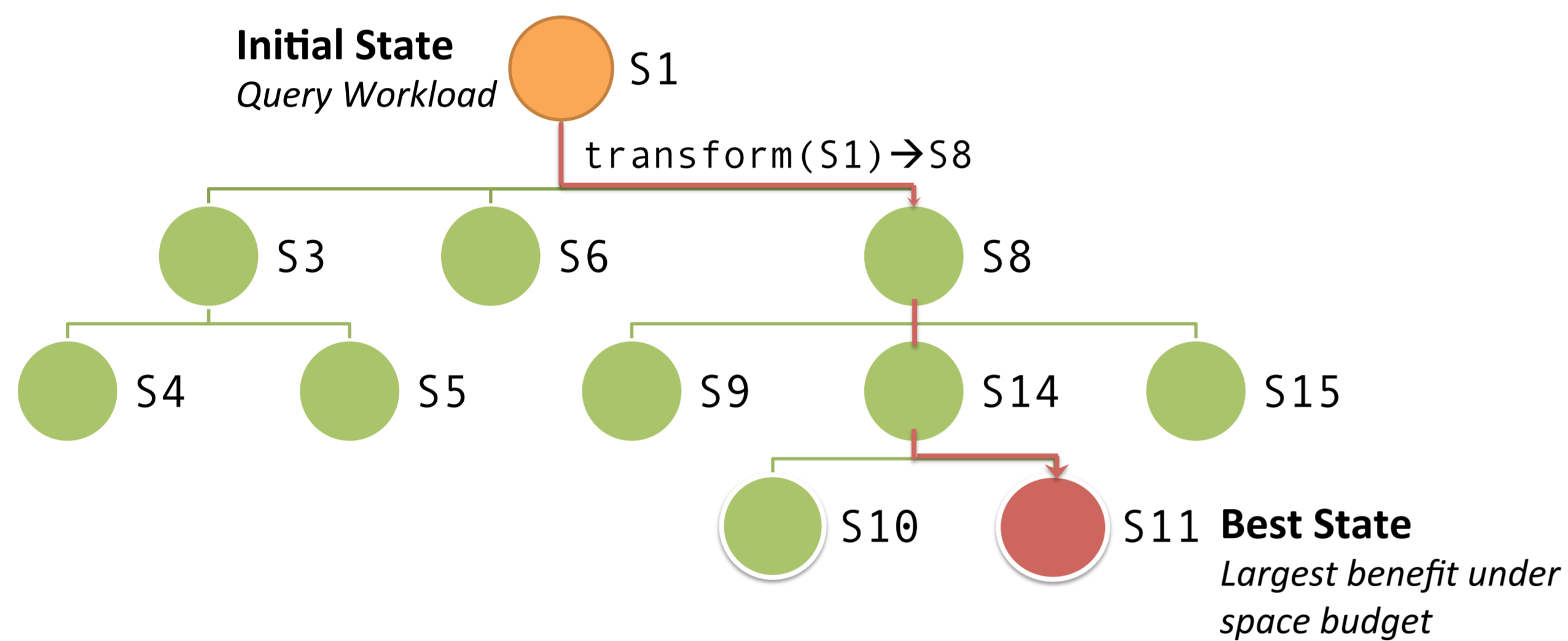
State Search View Selection

- State: view set
- Transformation: operation on a state
- Optimization Goal: Find largest-benefit state fitting in the space budget

State transformations:

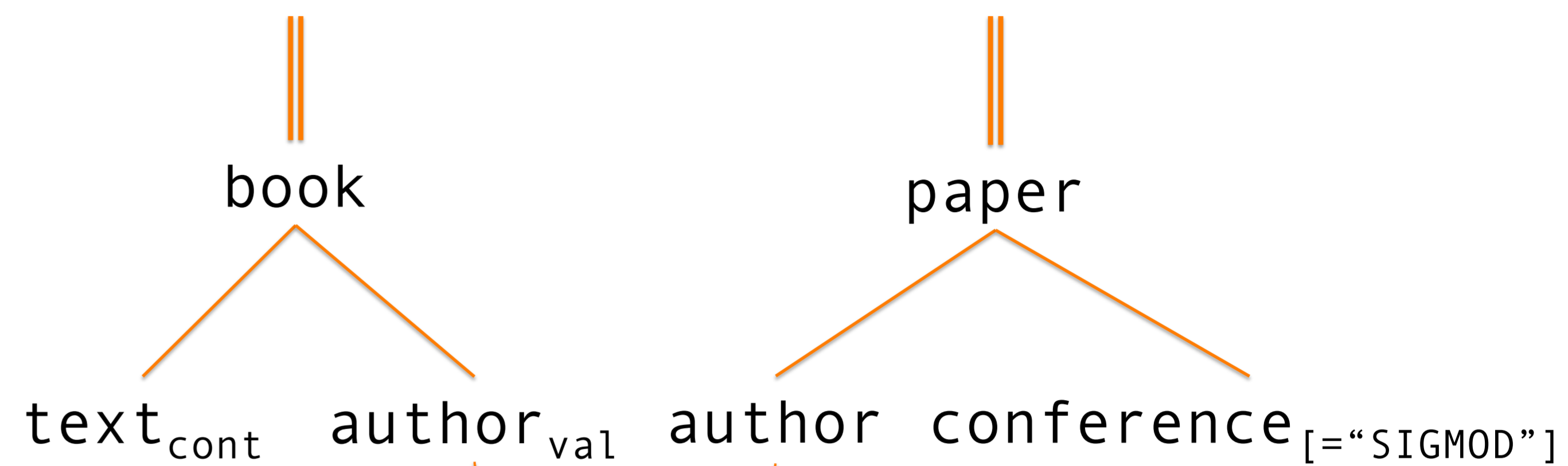
- **Break**: splits a view into two
- **Join**: joins two views together
- **Generalize**: relaxes a view
- **Adapt**: restricts a view

Can explore all search space

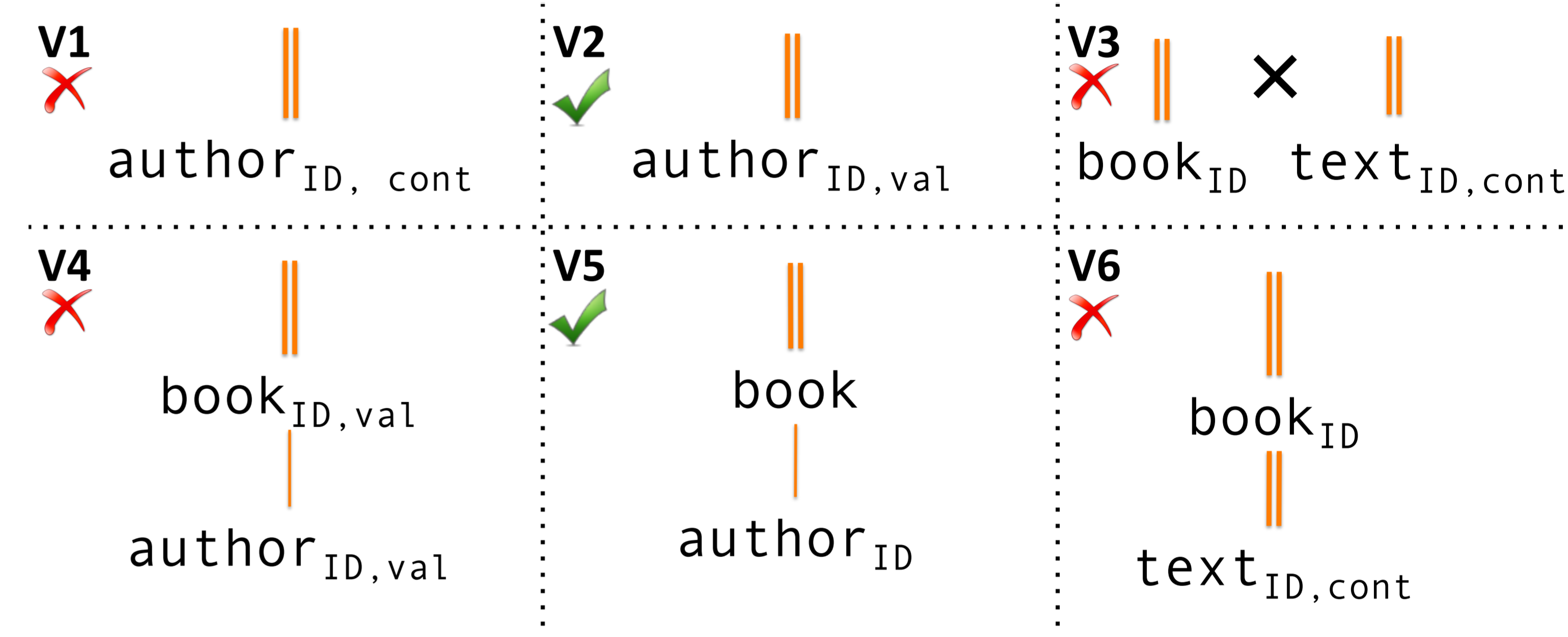


Candidate Views: do we need them all?

Queries: Tree Patterns with multiple return nodes and value Joins



Candidate Views: patterns that embed in the query

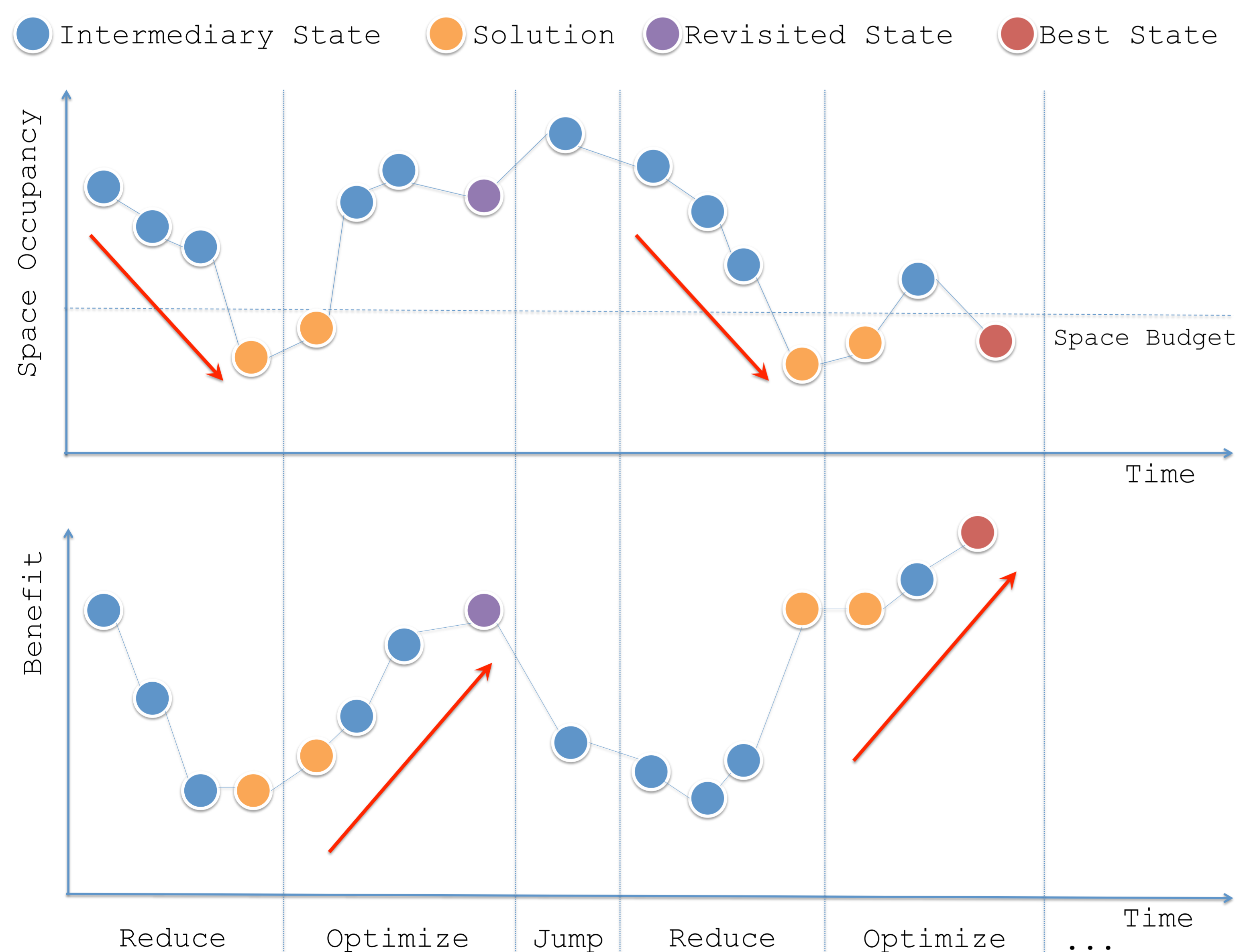


Views marked with X are pruned.

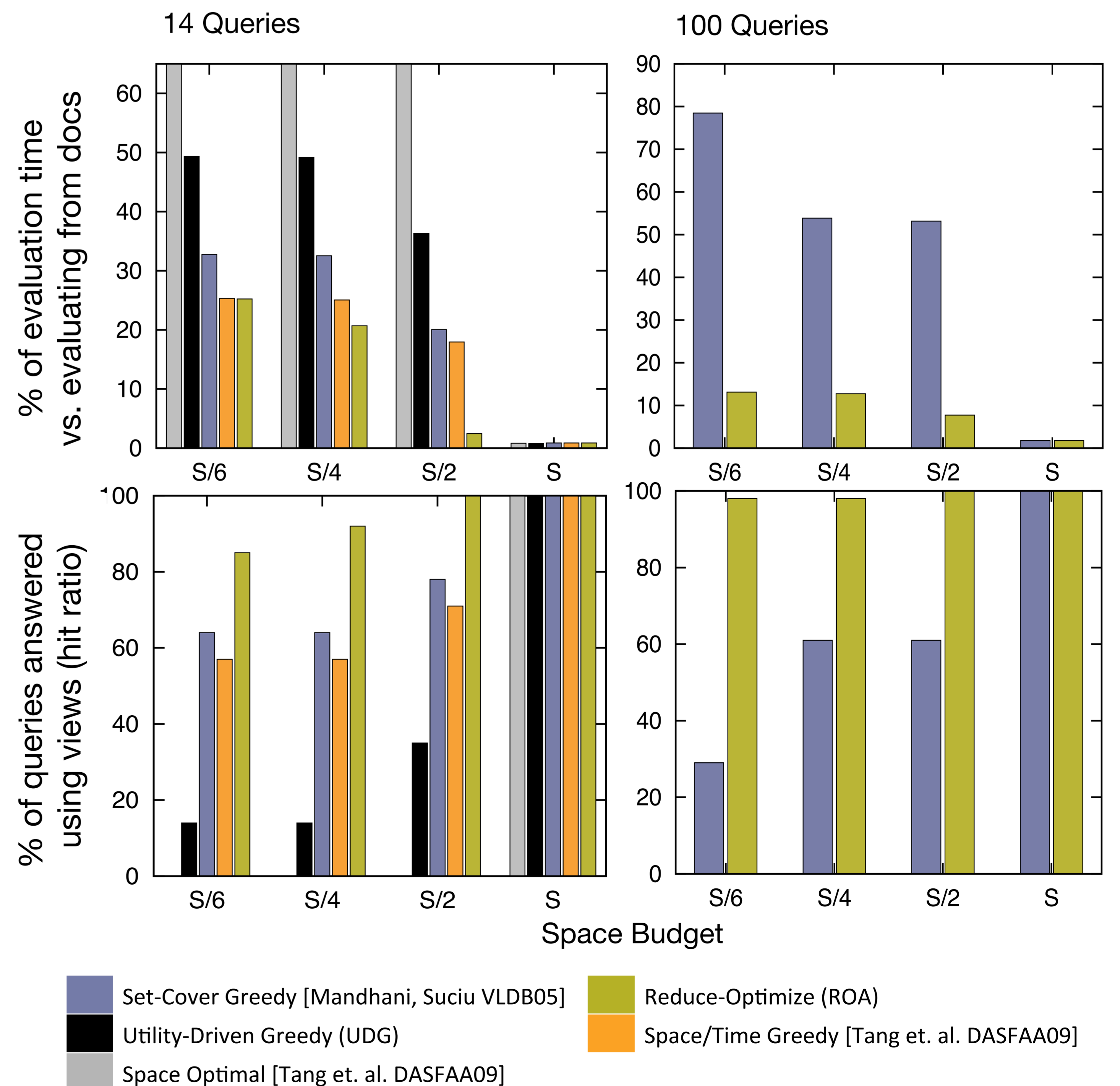
The Reduce-Optimize Algorithm (ROA)

Heuristic three phase search:

1. **Reduce** space occupancy
2. **Optimize** for evaluation costs
3. **Jump** to random state if needed



Experiments



Contact: asterios.katsifodimos@inria.fr