Bounding Impact on Performance Guarantee with Scaling of Database size in Plan Bouquet

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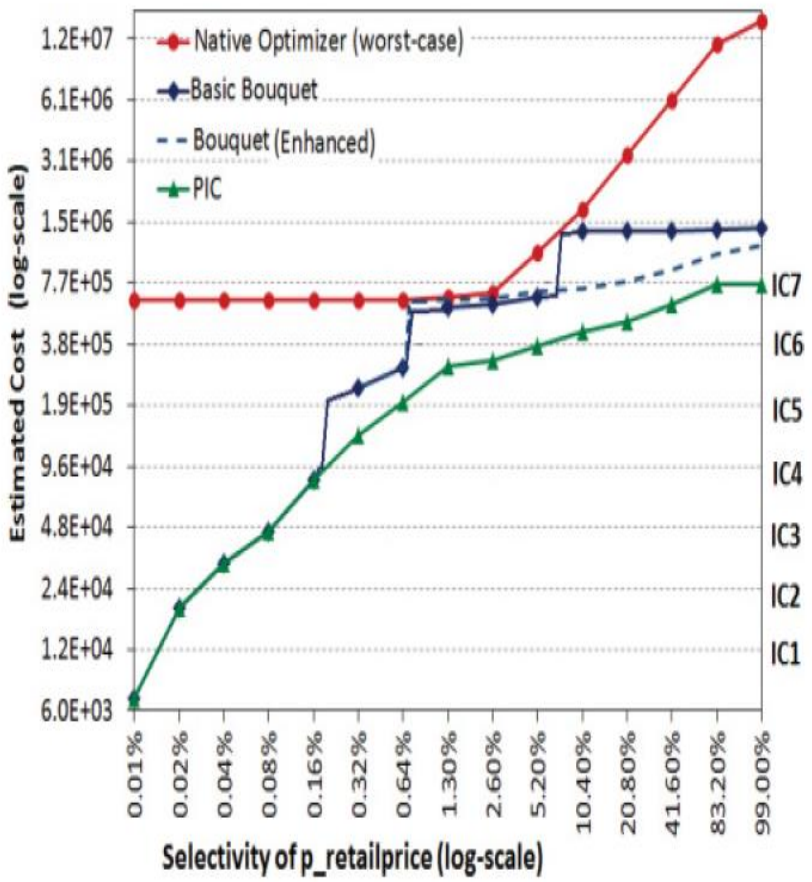
Problem Introduction

“Plan bouquet” is selectivity discovery approach

Subset of POSP plans chosen for ordered execution

Guarantee on worst case Performance bounds

Overview & Robustness Metrics



$$SubOpt(q_e, q_a) = \frac{c(P_{opt}(q_e), q_a)}{c(P_{opt}(q_a), q_a)} \quad \forall q_e, q_a \in ESS$$

$$SubOpt_{worst}(q_a) = \max_{q_e \in ESS} (SubOpt(q_e, q_a)) \quad \forall q_a \in ESS.$$

$$\mathbf{MSO} = \max_{q_a \in ESS} (SubOpt_{worst}(q_a)).$$

$$\mathbf{ASO} = \frac{\sum_{q_e \in ESS} \sum_{q_a \in ESS} SubOpt(q_e, q_a)}{\sum_{q_e \in ESS} \sum_{q_a \in ESS} 1}.$$

$$\mathbf{MH} = \max_{q_a \in ESS} \left(\frac{SubOpt(*, q_a)}{SubOpt_{worst}(q_a)} - 1 \right)$$

Challenges w.r.t. Size change

EXTENSION OF ESS WITH SIGNIFICANT DB CHANGE

MOVEMENT OF ISO-COST CONTOURS LED TO CHANGE IN CONTOUR-COVERING SEQUENCES

Implementation Details

Where Optimizer's abstract unit limits are given for controlled execution.

Impact on join selectivities with different feed for base relations filter

Further Directions

Predicate selection for ESS

Canned vs Ad-Hoc queries

Progressive off-line enumeration

Options During Scale-Up

Re-compilation of entire Bouquet

Providing Relaxation of Performance Guarantee

Approaches looking for

State save, for faster re-compilation

Performance Tolerance on Iso-cost surface shift

Reference Literature

- **Plan Bouquets**: A Fragrant Approach to Robust Query Processing
- Platform-independent Robust Query Processing
- A Concave Path to Low-overhead Robust Query Processing