

Grant Number: IIS- 0307072 Institution of PI: North Carolina State University
PI: Rada Y. Chirkova
Title: Efficient View-Design Algorithms for Near-Optimal Query Performance

Research Objectives:

The goal is to develop effective methods to improve the performance of frequent and important queries using materialized views. The expected outcomes are efficient and scalable algorithms that design (near-) optimal sets of views for the queries.

Significant Results:

In the star-schema setting, it is efficient to rewrite aggregate queries using joins of views with or without aggregation. The problem can be reduced to the problem of rewriting queries with aggregation using one view with aggregation at a time (BPUS approach).

Approach:

The project has two parts: (1) theoretical analysis and design of algorithms and heuristics for view design, and (2) implementation and experiments on large databases, to evaluate the performance improvements caused by using the views.

Broader Impact:

The outcomes of this project could improve the efficiency of user interactions with data-management systems. Solving the problem will have the most effect in query optimization, data warehousing, and information integration.

Graphic:

