



Eyes-on-Research

Lecture Series on
Computer Science And Engineering

Robust Query Processing: Where Geometry Beats ML!



Prof. Jayant R. Haritsa

Abstract: Over the past half-century, declarative query processing techniques have been a foundational topic in relational database research. Yet the solutions have largely remained a “black art” due to the inherent complexities of such processing. The situation is particularly problematic since performance degradation in database queries can reach orders of magnitude compared to an oracular ideal.

Recent efforts have sought to address the challenge afresh from first principles, focusing on two key approaches: (a) learning techniques for predicting query performance, and (b) geometric strategies for leveraging execution plan trajectories in parameter space. While data-driven models dominate the literature, we will argue that basic geometric properties such as monotonicity, concavity, and bounded slopes, can be leveraged to deliver superior solutions with strong, quantifiable guarantees on runtime performance.

Professor Jayant R. Haritsa is a renowned researcher in Database Systems. He has been on the computer science faculty at Indian Institute of Science, Bangalore, since 1993. He received a BTech degree from the Indian Institute of Technology (Madras), and the MS and the PhD degrees from University of Wisconsin (Madison). He was awarded the **Shanti Swarup Bhatnagar Prize** in 2009 and the **Infosys Prize** in 2014. He is a **Fellow of ACM** and **IEEE** for his contributions to database engine design and analysis.

Time: **5:10 PM, Tuesday 4th March, 2025**
Venue: **RM101**

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