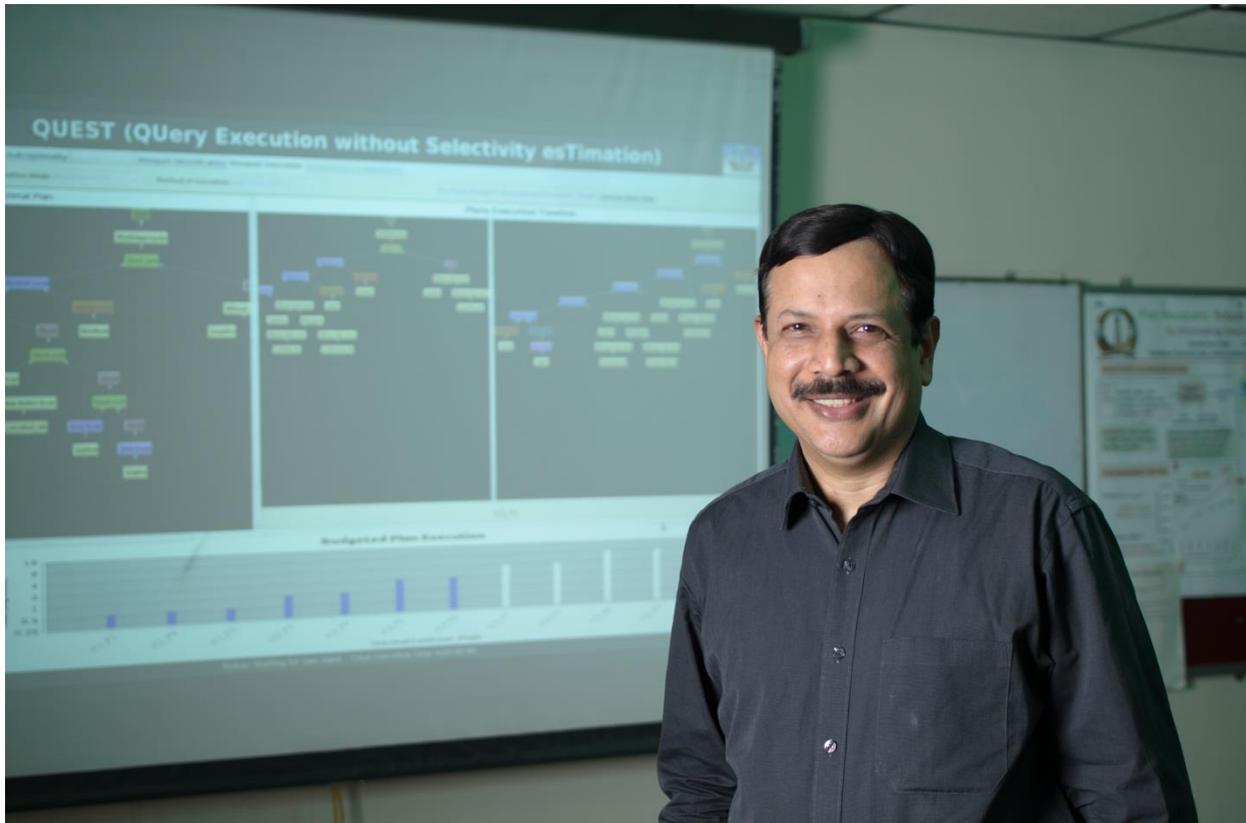


COMPILED AND EDITED BY THE **CONNECT TEAM** BASED ON INPUT FROM THE
FEATURED **RESEARCHERS**

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(MANOJ SUDHAKARAN)

Developing robust database management systems

Database management systems constitute the behind-the-scenes backbone of today's information-rich society, providing a congenial environment for handling enterprise data during its entire life cycle. A compelling instance of their grassroots impact is the centralized database created by the Government of India, under the Aadhaar card programme, for hosting the humongous corpus of personalized identification information collected from the Indian population. With the impending advent of the Big Data world, where data is expected to be the

engine driving virtually all aspects of human endeavor, the role of database systems will soon assume ubiquitous proportions.

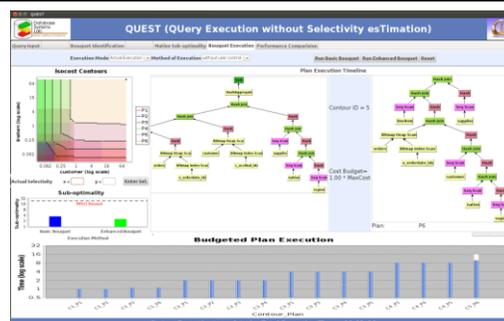
A potent and unique feature of database systems is their organic support for *declarative user queries*, where the user only specifies the search objectives, and the system is responsible for identifying an efficient means to achieve these ends. In practice, however, it is often belatedly realized after the query execution is completed, that a poor choice of strategy had been made. Therefore, a highly desirable, but equally elusive target for several decades has been the provision of *performance guarantees* on the specific means chosen by the system.

Jayant Haritsa leads the Database Systems Lab (DSL) at the Institute which has, over the past two years, solved this classical problem by designing a radically different query execution mechanism called *plan bouquets*. This game-changing approach delivers, for the first time, proven and competitive performance guarantees. Moreover, it does so even in complex situations where contemporary commercial systems suffer significant degradation in their operational quality.

In a nutshell, DSL has developed the first-ever *provably robust query processing technique*, thereby fulfilling a dire and long-felt need of the global information management community. Major database vendors are currently exploring integration of these far-reaching ideas in their products.

A prototype implementation of the plan bouquet mechanism received the *Best Software* award at VLDB 2014, a premier international database research conference. Haritsa also won the prestigious *Infosys Science Foundation Award* in 2014 for his research contributions.

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Basic Bouquet Execution (Courtesy: JAYANT HARITSA)



Haritsa with his team (MANOJ SUDHAKARAN)