

Tuesday, 27.09.2022, 09:00
Status Talk Axel Hertzschuch
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Title:

“Adaptive SPJ Query Optimization”

Abstract:

Modern software systems are facing a variety of demanding challenges. Emerging hardware, changing environments, and changing development requests are driving traditional software modeling processes towards their limits. As pointed out by recent research, immutable runtime objects are likely to become the Achilles heel of modern software systems. To model long-living, highly adaptive, and seamlessly extensible systems, Steinmann et al. discuss the concept of roles. These roles lift some fundamental burdens of object-oriented modeling; however, they foster already challenging aspects of analytical query processing. Analyzing role-based data in a relational fashion requires the support for arbitrary data types and the execution of a plethora of joins, e.g., to connect player types with role types. The continuous adaptation and expansion of higher-level software systems therefore puts much pressure on the query optimizer that is responsible for reducing query execution times as much as possible. This thesis shows that existing optimization methods are insufficient for analyzing role-based data. To support arbitrary data types and to account for highly correlated or selective filter expressions, a novel sampling-based selectivity estimator is developed. This thesis further studies a light-weight pessimistic join ordering concept in tandem with a learning-based join operator selection model to deal with the very complex join patterns of relational role-based data.
