

# Performance Engineering for In-Memory Databases: Models, Experiments and Optimization

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## Abstract

The recent growth of interest for in-memory databases poses the question on whether established performance engineering methods such as analytical models, response surfaces and queueing simulation are effective in describing these database systems. In this talk, I will discuss our recent work on analytical models for performance assessment and optimization of in-memory databases. These include novel response time approximations under online analytical processing workloads to model thread-level fork-join and per-class memory occupation. I will then discuss the relative merits of performance modelling compared to experimental design methods that generate response surfaces and our recent experience on optimal workload placement in such systems.

## Keywords

In-Memory Database; Performance; Modeling

## Speaker Biography

Giuliano Casale received the Ph.D. degree in Computer Engineering from Politecnico di Milano, Italy, in 2006. In 2010 he joined the Department of Computing at Imperial College London, UK, where is currently a Senior Lecturer in modeling and simulation. Previously, he worked as a research scientist at SAP Research UK and as a post-doctoral research fellow at the College of William & Mary, US. He teaches and does research in performance engineering, cloud computing, and operations research. He has served as co-chair for various conferences in the area of performance engineering, including SIGMETRICS/Performance, MASCOTS, ICAC and ICPE. In 2011-2015 he served as Editor of ACM Performance Evaluation Review. He is member of the IFIP WG 7.3 group on Computer Performance Analysis and serves in the ACM SIGMETRICS Board of Directors.

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