The ICDT 2016 Test of Time Award Announcement

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Abstract

We describe the 2016 ICDT Test of Time Award which is awarded to Chandra Chekuri and Anand Rajaraman for their 1997 ICDT paper on "Conjunctive Query Containment Revisited".

1998 ACM Subject Classification H.2.3 [Database Management] Languages

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1 The ICDT 2016 Test of Time Award

In 2013, the International Conference on Database Theory (ICDT) began awarding the ICDT Test of Time (ToT) Award, with the goal of recognizing one paper, or a small number of papers, presented at earlier ICDT conferences that have best met the "test of time". In 2016, the award recognizes a paper selected from the proceedings of the ICDT 1995 & 1997 conferences, that has had the highest impact in terms of research, methodology, conceptual contribution, or transfer to practice over the past decade. The award was presented during the EDBT/ICDT 2016 Joint Conference, March 15–18, 2016 in Bordeaux, France.

The 2016 Test of Time Award Committee, consisting of Foto N. Afrati, Claire David, and Georg Gottlob (chair), has chosen the following contribution for the 2016 ICDT Test of Time Award:[1]

Conjunctive Query Containment Revisited
by Chandra Chekuri and Anand Rajaraman
6th International Conference on Database Theory (ICDT 1997)

The paper is available here: http://dx.doi.org/10.1007/3-540-62222-5_36.

2 Contribution

This landmark paper made highly significant contributions to the problems of conjunctive query containment and optimization. While it was known that these NP-hard problems are tractable in case of acyclic queries, Chekuri and Rajaraman observed that the most

[1] Full citation is given in [1].

commonly encountered queries, while not necessarily acyclic, are in some sense nearly acyclic and still lend themselves to polynomial-time containment and minimization algorithms. To make this precise, they introduced the concept of *query width*, which is based on the notion of *query decomposition* combining treewidth-like decomposition techniques with set covering methods. In particular, the class of acyclic queries coincides with the class of queries having query width 1. They showed that the problems of query-containment and query minimization are tractable for classes of queries whose query width is bounded by some constant k in case a query decomposition of width $\leq k$ is given.

The paper contains a number of further important results on (i) the relationship between the query width of a query and the treewidth of its incidence graph, (ii) the hardness of approximating query minimization, and (iii) rewriting and answering queries of bounded query width in presence of views.

This highly cited paper, whose full version has appeared in *Theoretical Computer Science* [2], had a major impact on subsequent work in Database Theory and Artificial Intelligence (in particular, constraint satisfaction). Its pioneering use of hypergraph-based rather than graph-based decomposition techniques marked the beginning of a still ongoing series of investigations that have led to the definition of further, successively more general decomposition techniques, rooted in the very idea of query decomposition.

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The ICDT Test of Time Award Committee for 2016

References

1 Chandra Chekuri and Anand Rajaraman. Conjunctive query containment revisited. In *Proc. of the 6th International Conference on Database Theory (ICDT'97), Delphi, Greece, January 8–10, 1997*, volume 1186 of *Lecture Notes in Computer Science*, pages 56–70. Springer, 1997. doi:10.1007/3-540-62222-5_36.

2 Chandra Chekuri and Anand Rajaraman. Conjunctive query containment revisited. *Theor. Comput. Sci.*, 239(2):211–229, 2000. doi:10.1016/S0304-3975(99)00220-0.