Advances in Database Technology — EDBT 2015

18th International Conference
on Extending Database Technology
Brussels, Belgium, March 23–27, 2015
Proceedings

Editors

Gustavo Alonso
Floris Geerts
Lucian Popa
Pablo Barceló
Jens Teubner
Martín Ugarte
Jan Van den Bussche
Jan Paredaens

open proceedings

Advances in Database Technology — EDBT 2015
Proceedings of the 18th International Conference
on Extending Database Technology
Brussels, Belgium, March 23–27, 2015

Editors

Gustavo Alonso, ETH Zurich, Switzerland
Floris Geerts, University of Antwerp, Belgium
Lucian Popa, IBM Research, USA
Pablo Barceló, University of Chile, Chile
Jens Teubner, TU Dortmund, Germany
Martín Ugarte, Pontificia Universidad Catolica de Chile, Chile
Jan Van den Bussche, Hasselt University, Belgium
Jan Paredaens, University of Antwerp, Belgium

OpenProceedings.org
University of Konstanz
University Library
78457 Konstanz, Germany

OpenProceedings ISBN: 978-3-89318-067-7 DOI of this front matter: 10.5441/002/edbt.2015.01

Foreword

The 2015 International Conference on Extending Database Technology (EDBT) took place between the 23rd and the 27th of March in Brussels, Belgium. In its 18th edition, EDBT 2015 continued its long tradition of offering an outstanding research venue for the database community where to present and discuss recent contributions.

This year, there were 184 submissions to the research track, 19 to the industrial track, and 25 to the demo track. While these numbers are somewhat lower than in recent editions, the quality of the submissions was very high, which made the job of the Program Committee quite difficult. At the end, the program committee selected for publication 13 demos, 9 industrial papers, and 47 research papers. Of the latter, 5 of them were Vision Papers, shorter papers proposing radically new ideas, which were presented in their own session at the conference.

I would like to take this opportunity to thank all those that have made the 2015 EDBT edition such a success. First and foremost, all the authors of papers submitted to the conference, thereby providing the basis for a strong program, as well as the program committee members for their effort and dedication to study the submissions in detail and engaging in many interesting discussions about the papers, their contributions, their merits, and how to create the best possible program. Special mention should be made of the small committee in charge of deciding the Test of Time Award, in this occasion covering 4 editions of the conference (from 1988 to 1994): Martin Kersten, Christoph Koch, and Guido Moerkotte. They selected the following paper for the award:

> Geo-Relational Algebra: A Model and Query Language for Geometric Database Systems, Ralf Hartmut Güting, University of Hagen, Germany, from EDBT 1988.

I also would like to thank Lucian Popa and Jens Teubner for the great work they have done in running the industrial and demo tracks. Martín Ugarte has done an excellent job with the proceedings, as have Pablo Barceló with the tutorials and Peter Fischer with the workshops. The Conference Chair—Floris Geerts—and the local organizers have also been instrumental in coordinating all the efforts of what is a very complex and demanding endeavor. As a joint EDBT/ICDT Conference, we have four keynote talks, two of which have been proposed by the EDBT community. Thanks go to Christoph Koch and Wolfgang Lehner for their acceptance of our invitation. Finally, Christine Collet and Norman Paton have been instrumental in coordinating the overall effort with the Executive Board of EDBT.

Gustavo Alonso
EDBT 2015 Program Chair

Program Committee Members

Ashraf Aboulnaga (U Waterloo)
Walid Aref (Purdue)
Roger Barga (Microsoft)
Spyros Blanas (Ohio State U)
Steven Blott (DCU)
Michael Böhlen (U Zurich)
Klemens Böhm (KIT)
Philippe Bonnet (ITU)
Luc Bouganim (INRIA)
Nieves Brisaboa (UDC)
Alejandro Buchmann (TU Darmstadt)
K. Selcuk Candan (ASU)
Michael Carey (UC Irvine)
Stefano Ceri (Politecnico Milano)
Lei Chen (HKUST)
Beng Chin Ooi (NUS)
Graham Cormode (U Warwick)
Isabel Cruz (UI Chicago)
Philippe Cudre-Mauroux (U Freibourg)
Sudipto Das (Microsoft)
Khuzaima Daudjee (U Waterloo)
Jens Dittrich (U Saarland)
Michael Duller (Oracle)
Wenfei Fan (U Edinburgh)
Alan Fekete (U Sydney)
Peter Fischer (Uni Freiburg)
Christoph Freytag (HU Berlin)
Johann Gamper (UNIBZ)
Minos Garofalakis (TU Crete)
Boris Glavic (IIT Illinois)
Jiawei Han (UI Urbana Champaign)
Thomas Heinis (Imperial College)
Melanie Herschel (INRIA)
Stratos Idreos (Harvard)
Arantza Illarramendi (UPV/EHU)
U Kang (KAIST)
Arijit Khan (ETH Zurich)
Nick Koudas (U Toronto)
Georg Lausen (Uni Freiburg)
Wolfgang Lehner (TU Dresden)
Hong-Va Leong (PolyU Hong Kong)
Justin Levandoski (Microsoft)
Roy Levin (IBM)
Ninghui Li (Purdue)
Feifei Li (U Utah)
Eric Lo (PolyU Hong Kong)
Guy Lohman (IBM)
Bertram Ludaescher (UC Davis)
Nikos Mamoulis (HKU Hong Kong)
Stefan Manegold (CWI)
Norman May (SAP)
Sharad Mehrotra (UC Irvine)
Rene Müller (IBM)
Thomas Neumann (TU München)
Esther Pacitti (U Montpellier 2)
Themis Palpanas (Paris Descartes)
Olga Papaemmanouil (Brandeis U)
Marta Patiño (Politécnica Madrid)
Torben B. Pedersen (U Aalborg)
Peter Pietzuch (Imperial College)
Evvagelia Pitoura (U Ioannina)
Calton Pu (Georgia Tech)
Philippe Pucheral (INRIA)
Krithi Ramamrithan (IIT Bombay)
Maya Ramanath (IIT Delhi)
Rodolofo Resende (UFMG)
Tore Risch (Uppsala U)
Kenneth Ross (Columbia)
Pierangela Samarati (U Milan)
Marc H. Scholl (U Konstanz)
Heiko Schuldt (U Basel)
Assaf Schuster (Technion IIT)
Thomas Seidl (RWTH Aachen)
Timos Sellis (RMIT)
Liuba Shrira (Brandeis U)
Jianwen Su (UCSB)
Letizia Tanca (Politecnico Milano)
Ernest Teniente (U Poli de Catalunya)
Peter Triantafillou (U Glasgow)
Anthony K.H. Tung (NUS)
Vasilis Vassalos (AUEB)
Marcos Vaz Salles (U Copenhagen)
Yannis Velegrakis (U Trento)
Gottfried Vossen (U Münster)
Kyu-Young Whang (KAIST)
Jef Wijsen (UMONS)
Yoshitaka Yamamoto (U Yamanashi)
Carlo Zaniolo (UCLA)
Wenjie Zhang (UNSW)
Esteban Zimanyi (ULB)

EDBT 2015 Test of Time Award

In 2014, EDBT began awarding the EDBT test-of-time (ToT) award, with the goal of recognizing one paper, or a small number of papers, presented at EDBT earlier and that have best met the "test of time", i.e. that has had the most impact in terms of research, methodology, conceptual contribution, or transfer to practice over the past decade(s). The EDBT ToT award for 2015 will be presented during the EDBT/ICDT 2015 Joint Conference, March 23-27, in Brussels (Belgium). The EDBT 2015 Test of Time Award committee was formed by Martin Kersten (CWI, The Netherlands), Guido Moerkotte (Uni Mannheim, Germany), Christoph Koch (EPFL, Switzerland), all members of the EDBT 2015 PC and chaired by Gustavo Alonso, the EDBT 2015 PC chair.

The committee was charged with selecting a paper or a small number of papers from the proceedings of the following 4 editions: EDBT'88 - Venice, EDBT'90 - Venice, EDBT'92 - Vienna, EDBT'94 - Cambridge.

After careful consideration, the committee has decided to select the following paper, as the EDBT ToT Award winner for 2015:

Geo-Relational Algebra: A Model and Query Language for Geometric Database Systems

by Prof. Dr. Ralf Hartmut Güting, University of Hagen, Germany

Published in the EDBT 1988 proceedings, 506-527

The paper addresses the user's conceptual model of a database system for geometric data. It proposes to extend relational database management systems by integrating geometry at all levels: At the conceptual level, relational algebra is extended to include geometric data types and operators. At the implementation level, the wealth of algorithms and data structures for geometric problems developed in the past decade in the field of Computational Geometry is exploited. The paper starts from a view of relational algebra as a many-sorted algebra which allows to easily embed geometric data types and operators. A concrete algebra for two-dimensional applications is developed. It can be used as a highly expressive retrieval and data manipulation language for geometric as well as standard data. Also, geo-relational database systems and their implementation strategy are discussed.

The committee members unanimously agreed that this paper clearly stands out in terms of relevance, impact, and influence in databases. Of all the papers considered, this is the one that had had the most and longest lasting impact with results that are still relevant today and whose influence can be traced to many real systems and a significant amount of follow up work.

The paper pioneered an important application area well before it became mainstream and did it in a systematic and clean way that has been very influential in both research and practice. Modern commercial systems all support geographic data types that are nowadays used in a wide range of applications and use cases (maps, locations based services, geographic information systems, mobility, etc.).

The selection committee also appreciated very much the cleanliness, completeness, insights, formalism, and systematic treatment of the problem as well as the approach followed by the author in selecting and solving a research problem.

Table of Contents