

# International Database Engineering & Applications Symposium



The logo features a stylized lightbulb with a globe inside. The globe is green and blue, representing Earth. The letters "IDEAS" are written in white, three-dimensional, blocky letters across the center of the globe. The base of the lightbulb is black with some white highlights, and the word "IDEAS" is faintly visible at the bottom.

Proceedings of  
**IDEAS'12**

Charles University, Prague, Czech Republic



ConfSys.org



UNIVERSITÉ  
**Concordia**  
UNIVERSITY

**Proceedings of**

# **IDEAS'12**

Prague, Czech Republic

2012-08-08 - 2012-08-10

#### **General Chair**

**Bipin C. Desai**(Concordia University,Canada)

#### **Program Chairs**

**Jaroslav Pokorny**(Charles University Prague, Czech Republic)

**Jorge Bernardino**(Instituto Politecnico de Coimbra, Portugal)

#### **Editors**

**Bipin C. Desai**(Concordia University,Canada)

**Jaroslav Pokorny**(Charles University Prague, Czech Republic)

**Jorge Bernardino**(Instituto Politecnico de Coimbra, Portugal)

#### **Sponsors**

**BytePress**

**ConfSys.org**

**Charles University  
Concordia University**

The Association for Computing Machinery

2 Penn Plaza, Suite 701  
New York, New York 10121-0701

ACM COPYRIGHT NOTICE. Copyright © 2008 by the Association for Computing Machinery, Inc. Permission to make digital or hard copies of part or all of this work for personal or classroom use is granted without fee provided that copies are not made or distributed for profit or commercial advantage and that copies bear this notice and the full citation on the first page. Copyrights for components of this work owned by others than ACM must be honoured. Abstracting with credit is permitted. To copy otherwise, to republish, to post on servers, or to redistribute to lists, requires prior specific permission and/or a fee. Request permissions from Publications Dept., ACM, Inc., fax +1 (212) 869-0481, or [permissions@acm.org](mailto:permissions@acm.org)

ACM intends to create a complete electronic archive of all articles and/or other material previously published by ACM. If you have written a work that was previously published by ACM in any journal or conference proceedings prior to 1978, or any SIG Newsletter at any time, and you do NOT want this work to appear in the ACM Digital Library, please inform [permissions@acm.org](mailto:permissions@acm.org), stating the title of the work, the author(s), and where and when published.

ISBN: 978-1-4503-1234-9

Editorial production by: BytePress

Cover Artwork by: Front graphics:(c) Lettie and (back photo) J. Opartny; design BytePress

# Table of Content

Full Papers  
Short Papers  
Poster Papers  
Preface  
Reviewers from the Program Committee  
External Reviewers  
Organizers

## Invited Paper

<b>Evolving social data mining and affective analysis methodologies, framework and applications</b>	<b>1</b>
Athena Vakali(Aristotle University of Thessaloniki)	
<b>XML Query Processing -- Efficiency and Optimality</b>	<b>8</b>
Radim Baca(Technical University of Ostrava)	
Michal Krátký(Technical University of Ostrava)	

## **Full Paper**

<b>A constrained frequent pattern mining system for handling aggregate constraints</b>	<b>14</b>
Carson K. Leung, et al(University of Manitoba)	
<b>TEEPA: A timely-aware elastic parallel architecture</b>	<b>24</b>
João Pedro Costa(Instituto Politecnico de Coimbra)	
Pedro Martins(Universidade de Coimbra)	
José Cecilio	
Pedro Furtado(Universidade de Coimbra)	
<b>Autonomous Database Partitioning Using Data Mining on Single Computers and Cluster Computers</b>	<b>32</b>
Liangzhe Li(University of Oklahoma)Le Gruenwald(University of Oklahoma)	
<b>Schematron Schema Inference</b>	<b>42</b>
Jakub Staska(Charles University Prague)	
Michal Kozak(Charles University Prague)	
Irena Mlynkova(Charles University Prague)	
<b>Partitioning XML Documents for Iterative Queries</b>	<b>51</b>
Dario Colazzo(Universite Paris Sud (Paris XI))	
Nicole L. Bidoit-Tollu(Universite Paris Sud (Paris XI))	
Carlo Sartiani(University of Basilicata)	
Noor MALLA(Universite Paris Sud (Paris XI))	
<b>Evaluation of Data Reduction Techniques for Vehicle to Infrastructure Communication Saving Purposes</b>	<b>61</b>
Luca Carafoli(University of Modena)	
Federica Mandreoli(University of Modena)	
Riccardo Martoglia(University of Modena)	
Wilma Penzo(University of Bologna)	

## **Full Paper(Continued)**

<b>DYMOND: An Active System for Dynamic Vertical Partitioning of Multimedia Databases</b>	<b>71</b>
Lisbeth Rodríguez(Universidad Autonoma del Estado de Mexico)	
Xiaou Li(Instituto Politecnico Nacional)	
Jair Cervantes(Universidad Autonoma del Estado de Mexico)	
Farid Garcia(Universidad Autonoma del Estado de Mexico)	
<b>CMOA: Continuous Moving Object Anonymization</b>	<b>81</b>
Tsubasa Takahashi(NEC)	
Shinya Miyakawa(NEC)	
<b>The QOL approach for optimizing distributed queries without complete knowledge on data</b>	<b>91</b>
Lourdes Martinez(Institut Polytechnique de Grenoble)	
Christine Collet(Institut Polytechnique de Grenoble)	
Christophe Bobineau(Institut National Polytechnique de Grenoble)	
Etienne Dublé(Centre National de la Recherche Scientifique)	
<b>A cooperative scheme to aggregate spatio-temporal events in VANETs</b>	<b>100</b>
Dorsaf Zekri(Institut National des Telecommunications)	
Bruno Defude(Telecom Sud Paris)	
Thierry Delot(INRIA)	
<b>Efficient Graph Management Based On Bitmap Indices</b>	<b>110</b>
Norbert Martínez-Bazan(Universitat Politecnica de Catalunya)	
Victor Muntés-Mulero(Computer Associates Spain)	
Sergio Gómez-Villamor(Universidad Politecnica de Cataluna)	
Miguel Ángel Aguila(Universidad Politecnica de Cataluna)	
David Dominguez-Sal(Universidad Politecnica de Cataluna)	
Josep L Larriba-Pey(Universitat Politecnica de Catalunya)	
<b>Sample-Based Forecasting Exploiting Hierarchical Time Series</b>	<b>120</b>
Ulrike Fischer(Technische Universitat Dresden)	
Frank Rosenthal(Technische Universitat Dresden)	
Wolfgang Lehner(Technische Universitat Dresden)	
<b>Stream-join Revisited in the Context of Epoch-based SQL Continuous Query</b>	<b>130</b>
Qiming Chen(Hewlett-Packard Company)	
Meichun Hsu(HP Corporation USA)	

## **Full Paper(Continued)**

<b>Resource Allocation Algorithm for a Relational Join Operator in Grid Systems</b>	<b>139</b>
Deniz Cokuslu(Universite Paul Sabatier (Toulouse III))	
Abdelkader Hameurlain(Universite Paul Sabatier (Toulouse III))	
Kayhan Erciyes(Izmir University)	
Franck Morvan(Universite Paul Sabatier (Toulouse III))	
<b>Incrementally Maintaining Run-length Encoded Attributes in Column Stores</b>	<b>146</b>
Abhijeet Mohapatra(Stanford University)	
Michael Genesereth(Stanford University)	
<b>XML Class Outlier Detection</b>	<b>155</b>
Giuseppe Manco(Consiglio Nazionale delle Ricerche)	
Elio Masciari(Consiglio Nazionale delle Ricerche)	
<b>Continuous Queries on Trajectories of Moving Objects</b>	<b>165</b>
Philip Schmiegelt(Fraunhofer FKIE)	
Andreas Behrend(Rheinische Friedrich-Wilhelms Universitat Bonn)	
Bernhard Seeger(Phillips-Universitat Marburg)	
Wolfgang Koch(Fraunhofer FKIE)	

## **Short Paper**

<b>Dealing with Inconsistencies in Linked Data Mashups</b>	<b>175</b>
Eveline Russo Sacramento(Pontificia Universidade Catolica do Rio de Janeiro)	
Marco Antonio Casanova(Pontificia Universidade Catolica do Rio de Janeiro)	
Karin K. Breitman(Pontificia Universidade Catolica do Rio de Janeiro)	
Antonio L. Furtado(Pontificia Universidade Catolica do Rio de Janeiro)	
Jose Antonio Fernandes Macedo(Universidade Federal do Ceara)	
Vania Maria Ponte Vidal(Universidade Federal do Ceara)	
<b>Mining GPS Traces to Recommend Common Meeting Points</b>	<b>181</b>
Sonia Khetarpaul(Indian Institute of Technology, Delhi)	
S K Gupta(Indian Institute of Technology, Delhi)	
L Venkata Subramaniam(IBM Research - India)	
Ullas Nambiar(IBM Research - India)	
<b>UBIQUEST, For Rapid Prototyping of Networking Applications</b>	<b>187</b>
Ahmad Ahmad-kassem(INRIA)	
Christophe Bobineau(Institut National Polytechnique de Grenoble)	
Christine Collet(Institut Polytechnique de Grenoble)	
Etienne Dublé(Centre National de la Recherche Scientifique)	
Stephane Grumbach(Institut National de Recherche en Informatique)	
Fuda Ma(Institut National des Sciences Appliquees de Lyon)	
Lourdes Martinez(Institut Polytechnique de Grenoble)	
Stephane Ubéda(Institut National de Recherche en Informatique)	
<b>A Mediator-based System for Distributed Semantic Provenance Management Systems</b>	<b>193</b>
Mohamed Amin Sakka(Institut National des Telecommunications)	
Bruno Defude(Telecom Sud Paris)	
<b>Mining probabilistic datasets vertically</b>	<b>199</b>
Carson K. Leung, et al(University of Manitoba)	
<b>Differential Evolution versus Genetic Algorithms: Towards Symbolic Aggregate Approximation of Non-normalized Time Series</b>	<b>205</b>
Muhammad Marwan Muhammad Fuad(Norwegian University of Science and Technology)	

## **Short Paper(Continued)**

<b>Efficient MD5 Hash Reversing using D.E.A. Framework For Sharing Computational Resources</b>	<b>211</b>
Nunziato Cassavia(Consiglio Nazionale delle Ricerche)	
Elio Masciari(Consiglio Nazionale delle Ricerche)	
<b>ECTree: An Extended Tree Index For Attributed Subgraph Queries</b>	<b>216</b>
Jun Luo(Concordia University)	
Gregory Butler(Concordia University)	
<b>On the semantics of ST4SQL, a multidimensional spatio-temporal query language</b>	<b>222</b>
Gabriele Pozzani(University of Verona)	
Carlo Combi(University of Verona)	

## **Poster Paper**

<b>Transaction Processing using Thread-to-Metadata</b>	<b>230</b>
Hoda M Mokhtar(Cairo University)	
Nariman Adel(Cairo University)	
<b>A Stream Query Language TPQL for Anomaly Detection in Facility Management</b>	<b>235</b>
Makoto Imamura(Mitsubishi Electric Corporation)	
Shigenobu Takayama(Mitsubishi Electric Corporation)	
Tatsuji Munaka(Mitsubishi Electric Corporation)	
<b>ORDB holistic design</b>	<b>239</b>
Patricia Elizabeth Roberts(University of Brighton)	

## Preface

IDEAS'12 is the seventeenth meeting in a series of annual meetings to address issues on the engineering and application of databases. The series was inaugurated in 1997 and has been held in North America, Europe, and Asia. Following the IDEAS tradition, these proceedings include quality papers presenting original ideas and new findings on applied technological and theoretical aspects of information technology. The Program Committee and the referees have ensured this quality for the papers through careful refereeing of the submitted papers. The submissions have gone through three phases of review; this consisted of screening for suitability, reviews by four members of the program committee followed by a double blind debate among reviewers in the case of controversial papers. The program reflects a high quality as indicated by 30% acceptance rate and consists of 17 full(18%), 9 short(11% of the remaining) and 3 poster(3% of the remaining) papers.

I am grateful to a number of people without whom we would not have been able to put the program together. These include our international program committee, which has done an excellent job that provided an excellent foundation upon which to make acceptance decisions.

I wish to express my gratitude to everyone for their help in organizing this event. I wish to also express my thanks to the sponsors: BytePress, Concordia University, and Charles University.

I would like to thank the invite speakers Athena Vakali and Michal Krátký for presenting their current work and allowing us to include it in this proceedings.

My special thanks to Jaroslav Pokorný and Jorge Bernardino, the program co-chairs.

Bipin C. Desai  
General Chair, IDEAS

# Reviewers from the Program Committee

- \* Toshiyuki Amagasa(Tsukuba University, Japan)
- \* Annalisa Appice(University of Bari, Italy)
- \* Masayoshi Aritsugi(Kumamoto University, Japan)
- \* Gilbert Babin(HEC Montreal, Canada)
- \* Jorge Bernardino(Instituto Politecnico de Coimbra, Portugal)
- \* Christophe Bobineau(Institut National Polytechnique de Grenoble, France)
- \* David Chiu(Washington State University, United States)
- \* André Clouâtre(University of Montreal, Canada)
- \* Christine Collet(Institut Polytechnique de Grenoble, France)
- \* Alfredo Cuzzocrea(University of Calabria, Italy)
- \* Gabriel David(Universidade do Porto, Portugal)
- \* Sandra de Amo(Universidade Federal de Uberlandia, Brazil)
- \* Bipin C. Desai(Concordia University, Canada)
- \* Anne Doucet(Universite Pierre et Marie Curie (Paris VI), France)
- \* Todd Eavis(Concordia University, Canada)
- \* Bettina Fazzinga(University of Calabria, Italy)
- \* Porfírio Pena Filipe(Instituto Superior de Engenharia de Lisboa, Portugal)
- \* Sergio Flesca(University of Calabria, Italy)
- \* Filippo Furfaro(University of Calabria, Italy)
- \* Pedro Furtado(Universidade de Coimbra, Portugal)
- \* Gosta Grahne(Concordia University, Canada)
- \* Sven Groppe(Medizinische Universitat Lubeck, Germany)
- \* Sonia Guehis(Universite Paris Nanterre (Paris X), France)
- \* Marc Gyssens(Hasselt University, Belgium)
- \* SERGIO ILARRI(Universidad de Zaragoza, Spain)
- \* Sang-Won Lee(Sung Kyun Kwan University, Korea Republic)
- \* Carson K. Leung(University of Manitoba, Canada)

# Reviewers from the Program Committee (Continued)

- \* Volker Karl Linnemann(Medizinische Universitat Lubeck, Germany)
- \* Chuan-Ming Liu(National Taipei University of Technology, Taiwan)
- \* Jose Antonio Fernandes Macedo(Universidade Federal do Ceara, Brazil)
- \* Federica Mandreoli(University of Modena, Italy)
- \* Hyun Jin Moon(NEC Laboratories America, United States)
- \* Yang-Sae Moon(Kangwon National University, Korea Republic)
- \* Yiu-Kai Dennis Ng(Brigham Young University, United States)
- \* Kalpdrum Passi(Laurentian University of Sudbury, Canada)
- \* Valéria Magalhães Pequeno(Instituto de Engenharia de Sistemas e Computadores, Portugal)
- \* Jaroslav Pokorny(Charles University Prague, Czech Repubilc)
- \* Rachel Pottinger(University of British Columbia, Canada)
- \* Andrew Rau-Chaplin(Dalhousie University, Canada)
- \* Rodolfo F Resende(Universidade Federal de Minas Gerais, Brazil)
- \* Peter Z. Revesz(University of Nebraska - Lincoln, United States)
- \* Igor Santos(Universidad de Deusto, Spain)
- \* Marinette Savonnet(Universite de Bourgogne, France)
- \* Atsuhiro Takasu(National Institute of Informatics, Japan)
- \* LETIZIA TANCA(POLITECNICO DI MILANO, Italy)
- \* Giorgio Terracina(University of Calabria, Italy)
- \* Stephanie Teufel(University of Fribourg, Switzerland)
- \* Jeffrey David Ullman(Stanford University, United States)
- \* Domenico Ursino(University of Reggio Calabria, Italy)
- \* jari Veijalainen(University of Jyvaskyla, Finland)
- \* Krishnamurthy vidyasankar(Memorial University of Newfoundland, Canada)
- \* Marco Vieira(Universidade de Coimbra, Portugal)
- \* Junhu Wang(Griffith University, Australia)

## **Reviewers from the Program Committee (Continued)**

\* Hazel Jane Webb(University of New Brunswick, Saint John, Canada)

\* John Wu(Lawrence Berkeley National Laboratoty, United States)

\* Ester Zumpano(University of Calabria, Italy)

\* Simonaš Šaltenis(Aalborg University, Denmark)

# External Reviewers

- \* Guadalupe M Canahuate(University of Iowa, United States)
- \* Jongwuk Lee(Pohang University of Science and Technology, Korea Republic)
- \* Lourdes Martinez(Institut Polytechnique de Grenoble, France)
- \* Emanuele Panigati(POLITECNICO DI MILANO, Italy)
- \* Angelo Rauseo(POLITECNICO DI MILANO, Italy)

# Organizers

## General Chair

Bipin C. Desai(Concordia University)

## Program Chairs

Jaroslav Pokorny(Charles University Prague)  
Jorge Bernardino(Instituto Politecnico de Coimbra)

## Local Organization

Matus Ondreicka, Charles University, Prague  
Jakub Kozak, Charles University, Prague

# Author List

- Adel, Nariman 230  
Aguila, Miguel 110  
Ahmad-kassem, Ahmad 187  
Baca, Radim 8  
Behrend, Andreas 165  
Bidoit-Tollu, Nicole 51  
Bobineau, Christophe 91, 187  
Breitman, Karin 175  
Butler, Gregory 216  
Carafoli, Luca 61  
Casanova, Marco 175  
Cassavia, Nunziato 211  
Cecilio, José 24  
Cervantes, Jair 71  
Chen, Qiming 130  
Cokuslu, Deniz 139  
Colazzo, Dario 51  
Collet, Christine 91, 187  
Combi, Carlo 222  
Costa, João 24  
Defude, Bruno 100, 193  
Delot, Thierry 100  
Dominguez-Sal, David 110  
Dublé, Etienne 91, 187  
Erciyes, Kayhan 139  
Fischer, Ulrike 120  
Furtado, Antonio 175  
Furtado, Pedro 24  
Garcia, Farid 71  
Genesereth, Michael 146  
Gruenwald, Le 32  
Grumbach, Stephane 187  
Gupta, S K 181  
Gómez-Villamor, Sergio 110  
Hameurlain, Abdelkader 139  
Hsu, Meichun 130  
Imamura, Makoto 235  
Khetarpaul, Sonia 181  
Koch, Wolfgang 165  
Kozak, Michal 42  
Krátký, Michal 8  
Larriba-Pey, Josep 110  
Lehner, Wolfgang 120  
Leung, et al, Carson 14, 199  
Li, Xiaou 71  
Li, Liangzhe 32  
Luo, Jun 216  
MALLA, Noor 51  
Ma, Fuda 187  
Macedo, Jose Antonio 175  
Manco, Giuseppe 155  
Mandreoli, Federica 61

## Author List(Continued)

- Martinez, Lourdes 91, 187
- Martins, Pedro 24
- Martoglia, Riccardo 61
- Martínez-Bazan, Norbert 110
- Masciari, Elio 155, 211
- Miyakawa, Shinya 81
- Mlynkova, Irena 42
- Mohapatra, Abhijeet 146
- Mokhtar, Hoda 230
- Morvan, Franck 139
- Muhammad Fuad, Muhammad Marwan 205
- Munaka, Tatsuji 235
- Muntés-Mulero, Victor 110
- Nambiar, Ullas 181
- Penzo, Wilma 61
- Pozzani, Gabriele 222
- Roberts, Patricia 239
- Rodríguez, Lisbeth 71
- Rosenthal, Frank 120
- Sacramento, Eveline 175
- Sakka, Mohamed Amin 193
- Sartiani, Carlo 51
- Schmiegelt, Philip 165
- Seeger, Bernhard 165
- Starka, Jakub 42
- Subramaniam, L Venkata 181
- Takahashi, Tsubasa 81
- Takayama, Shigenobu 235
- Ubéda, Stephane 187
- Vakali, Athena 1
- Vidal, Vania 175
- Zekri, Dorsaf 100



# IDEAS'12

**Proceeding, IDEAS'12**

**August 8-10, 2012**

