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Special Issue on Consistency and Inconsistency
in Data-Centric Applications

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Preface

At long last, we have finished completing a TLDKS collection of articles about consistency and inconsistency in data-centric applications. The road toward that aim was rough and rugged. At the outset, there was the workshop COIN at DEXA 2016, where eight papers about that same subject were presented. Those papers have been published in the 2016 volume of the DEXA workshop proceedings series. Both scientifically and socially speaking, the workshop was a big success.

At one of its social dinners, some of the participants came up with the proposal to invite contributions of more elaborate versions of COIN workshop papers, as well as to call for papers from colleagues in related research communities that had not taken part in the workshop, for publication in a journal.

At first, the idea was encouraged enthusiastically by all participants. So, together with a colleague, the writer of these lines put himself behind the task of finding a journal, issuing the invitations, broadcasting a call for papers, organizing a two-round reviewing process, and editing the final outcome.

All of that was more easily agreed upon than actually done. In the end, only three papers from the COIN workshop made it into the present TLDKS volume. The other COIN participants had opted out, for various reasons (large overlap with papers already published or planned to be published elsewhere, priority to get done with a PhD thesis, change of career plans, personal preferences).

Fortunately, there was some response to the call for papers. Six additional submissions were considered for publication by the reviewers, and three of them received green light to work on an improved version for inclusion this TLDKS edition. However, each of them, and also the papers drawn from the workshop, had received controversial reviews. It took several more rounds of thorough reviews, considerate reconciliation, and further modifications for the final versions included this volume.

In addition to the accepted papers, we were fortunate to be able to include an invited article, written by Philippe Besnard, entitled “Basic Postulates for Inconsistency Measures”. It advances a discussion that has been going on for several years about certain properties that inconsistency measures should have, or shouldn’t, depending on the demands of applications or one’s point of view.

Krishnamurthy Vidyasankar has contributed a paper entitled “Batch Composite Transactions in Stream Processing”. The author has successfully applied his recognized expertise on transaction serializability to the concurrent execution of batches of streaming data.

In their paper entitled “Enhancing User Rating Database Consistency through Pruning”, Dionisis Margaritis and Costas Vassilakis describe a sophisticated technique for improving the quality of stored data in recommender systems, by reducing user profile inconsistencies that are bound to accumulate over time.

In his paper entitled “A Second Generation of Peer-to-Peer Semantic Wikis”, Charbel Rahhal presents a mechanism for detecting inconsistencies in annotations of

collaborative semantic wikis. Also the causes of the inconsistencies are spotted and visualized, in order to support their removal.

The article by Jørgen Villadsen and Anders Schlichtkrull, entitled “Formalizing a Paraconsistent Logic in the Isabelle Proof Assistant”, features the capabilities of the automated proof assistant Isabelle. They are shown to not only support proofs in classical logic, but also the specification, modification, and execution of a paraconsistent logic.

Ricardo Queiroz de Araujo Fernandes, Edward Hermann Haeusler, and Luiz Carlos Pinheiro Dias Pereira have contributed an article on “A Proximity-Based Understanding of Conditionals”. The authors propose a logic account of David Kellogg Lewis’ counterfactual conditionals, an interesting application of which is hypothetical reasoning in databases.

The paper by Hendrik Decker is entitled “Inconsistency-Tolerant Database Repairs and Simplified Repair Checking by Measure-Based Integrity Checking”. It uses inconsistency measures for monitoring the dynamics of databases, as opposed to inconsistency measures such as those addressed in Besnard’s paper, which are meant to be applied in static propositional logic theories.

Finally, I’d like to acknowledge the indefatigable support of Gabriela Wagner at the TLDKS office, and say “thank you” to all authors and reviewers involved in this project, for their tireless commitment and perseverance. The reviews, and not least the most critical ones, were highly appreciated by the authors, enabling them to come up with satisfactory camera-ready versions. What follows is a list of the reviewers’ names, except those who prefer to remain anonymous: Ofer Arieli, Jesper Bengtson, Christoph Benz Müller, Walter Carnielli, Karen Davis, Valeria de Paiva, Hendrik Decker, Carlos F. Enguix, Hermann Haeusler, Leandro B. Marinho, Pedro Muñoz, Jyrki Nummenmaa, Denis Parra Santander, Lawrence Paulson, Andrei Popescu, Nuno Preguica, Norbert Ritter, Alexander Steen, Diego Torres, Christoph Trattner, Jørgen Villadsen, Gottfried Vossen, Makarius Wenzel, Yorick Wilks, Wolfram Wingerath, and Max Wisniewski. Many thanks to all of you!

August 2017

Hendrik Decker

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