



























## REFERENCES

- [1] Ziawach Abedjan, Xu Chu, Dong Deng, Raul Castro Fernandez, Ihab F. Ilyas, Mourad Ouzzani, Paolo Papotti, Michael Stonebraker, and Nan Tang. 2016. Detecting Data Errors: Where are we and what needs to be done? *Proc. VLDB Endow.* 9, 12 (2016), 993–1004.
- [2] Foto N. Afrati and Phokion G. Kolaitis. 2009. Repair checking in inconsistent databases: algorithms and complexity. In *ICDT*, Vol. 361. ACM, 31–41.
- [3] Marcelo Arenas, Leopoldo E. Bertossi, and Jan Chomicki. 1999. Consistent Query Answers in Inconsistent Databases. In *PODS*. ACM Press, 68–79.
- [4] Catriel Beeri and Moshe Y. Vardi. 1981. The Implication Problem for Data Dependencies. In *ICALP*, Vol. 115. Springer, 73–85.
- [5] Leopoldo E. Bertossi. 2018. Measuring and Computing Database Inconsistency via Repairs. *CoRR* abs/1804.08834 (2018).
- [6] Leopoldo E. Bertossi. 2018. Measuring and Computing Database Inconsistency via Repairs. In *SUM (Lecture Notes in Computer Science, Vol. 11142)*. Springer, 368–372.
- [7] Leopoldo E. Bertossi, Loreto Bravo, Enrico Franconi, and Andrei Lopatenko. 2008. The complexity and approximation of fixing numerical attributes in databases under integrity constraints. *Inf. Syst.* 33, 4-5 (2008), 407–434.
- [8] Tobias Bleifuß, Sebastian Kruse, and Felix Naumann. 2017. Efficient Denial Constraint Discovery with Hydra. *PVLDB* 11, 3 (2017), 311–323.
- [9] Philip Bohannon, Wenfei Fan, Floris Geerts, Xibei Jia, and Anastasios Kementsietsidis. 2007. Conditional Functional Dependencies for Data Cleaning. In *ICDE*. IEEE, 746–755.
- [10] Nofar Carmeli, Martin Grohe, Benny Kimelfeld, Ester Livshits, and Muhammad Tibi. 2020. Database Repairing with Soft Functional Dependencies. *CoRR* abs/2009.13821 (2020).
- [11] Xu Chu, Ihab F. Ilyas, and Paolo Papotti. 2013. Discovering Denial Constraints. *PVLDB* 6, 13 (2013), 1498–1509.
- [12] Xu Chu, Ihab F. Ilyas, and Paolo Papotti. 2013. Holistic data cleaning: Putting violations into context. In *ICDE*. IEEE Computer Society, 458–469.
- [13] Gao Cong, Wenfei Fan, Floris Geerts, Xibei Jia, and Shuai Ma. 2007. Improving Data Quality: Consistency and Accuracy. In *VLDB*. ACM, 315–326.
- [14] Alex Paul Conn. 1995. Time Affordances: The Time Factor in Diagnostic Usability Heuristics. In *SIGCHI (Denver, Colorado, USA) (CHI '95)*. ACM Press/Addison-Wesley Publishing Co., New York, NY, USA, 186–193. <https://doi.org/10.1145/223904.223928>
- [15] Alessio Conte, Roberto Grossi, Andrea Marino, and Luca Versari. 2016. Sublinear-Space Bounded-Delay Enumeration for Massive Network Analytics: Maximal Cliques. In *ICALP (LIPIcs, Vol. 55)*. Schloss Dagstuhl - Leibniz-Zentrum für Informatik, 148:1–148:15.
- [16] Amr Ebad, Ahmed K. Elmagarmid, Ihab F. Ilyas, Mourad Ouzzani, Jorge-Arnulfo Quiané-Ruiz, Nan Tang, and Si Yin. 2013. NADEEF: A Generalized Data Cleaning System. *PVLDB* 6, 12 (2013), 1218–1221.
- [17] Wenfei Fan, Floris Geerts, Xibei Jia, and Anastasios Kementsietsidis. 2008. Conditional functional dependencies for capturing data inconsistencies. *ACM Trans. Database Syst.* 33, 2 (2008), 6:1–6:48.
- [18] Ariel Fuxman and Renée J. Miller. 2007. First-order query rewriting for inconsistent databases. *J. Comput. Syst. Sci.* 73, 4 (2007), 610–635. <https://doi.org/10.1016/j.jcss.2006.10.013>
- [19] Terry Gaasterland, Parke Godfrey, and Jack Minker. 1992. An Overview of Cooperative Answering. *J. Intell. Inf. Syst.* 1, 2 (1992), 123–157.
- [20] Jaffer Gardezi, Leopoldo E. Bertossi, and Iluju Kiringa. 2011. Matching dependencies with arbitrary attribute values: semantics, query answering and integrity constraints. In *LID*. 23–30.
- [21] Floris Geerts, Giansalvatore Mecca, Paolo Papotti, and Donatello Santoro. 2013. The LLUNATIC Data-Cleaning Framework. *PVLDB* 6, 9 (2013), 625–636.
- [22] Oded Goldreich, Shafi Goldwasser, and Dana Ron. 1998. Property Testing and its Connection to Learning and Approximation. *J. ACM* 45, 4 (1998), 653–750. <https://doi.org/10.1145/285055.285060>
- [23] John Grant and Anthony Hunter. 2006. Measuring inconsistency in knowledge-bases. *J. Intell. Inf. Syst.* 27, 2 (2006), 159–184.
- [24] John Grant and Anthony Hunter. 2011. Measuring Consistency Gain and Information Loss in Stepwise Inconsistency Resolution. In *ECSQARU*, Vol. 6717. Springer, 362–373.
- [25] John Grant and Anthony Hunter. 2013. Distance-Based Measures of Inconsistency. In *ECSQARU (Lecture Notes in Computer Science, Vol. 7958)*. Springer, 230–241.
- [26] John Grant and Anthony Hunter. 2017. Analysing inconsistent information using distance-based measures. *Int. J. Approx. Reasoning* 89 (2017), 3–26. <https://doi.org/10.1016/j.ijar.2016.04.004>
- [27] LLC Gurobi Optimization. 2020. Gurobi Optimizer Reference Manual. <http://www.gurobi.com>
- [28] Chris Harrison, Brian Amento, Stacey Kuznetsov, and Robert Bell. 2007. Rethinking the Progress Bar. In *UIST (Newport, Rhode Island, USA) (UIST '07)*. ACM, New York, NY, USA, 115–118.
- [29] Chris Harrison, Zhiqian Ye, and Scott E. Hudson. 2010. Faster Progress Bars: Manipulating Perceived Duration with Visual Augmentations. In *SIGCHI (Atlanta, Georgia, USA) (CHI '10)*. ACM, New York, NY, USA, 1545–1548.
- [30] Anthony Hunter and Sébastien Konieczny. 2008. Measuring Inconsistency through Minimal Inconsistent Sets. In *KR*. AAAI Press, 358–366.
- [31] Anthony Hunter and Sébastien Konieczny. 2010. On the measure of conflicts: Shapley Inconsistency Values. *Artif. Intell.* 174, 14 (2010), 1007–1026.
- [32] Kevin M. Knight. 2003. Two Information Measures for Inconsistent Sets. *Journal of Logic, Language and Information* 12, 2 (2003), 227–248.
- [33] Solmaz Kolahi and Laks V. S. Lakshmanan. 2009. On approximating optimum repairs for functional dependency violations. In *ICDT*, Vol. 361. ACM, 53–62.
- [34] Sébastien Konieczny, Jérôme Lang, and Pierre Marquis. 2003. Quantifying information and contradiction in propositional logic through test actions. In *IJCAL*. Morgan Kaufmann, 106–111.
- [35] Paraschos Koutris and Jef Wijsen. 2017. Consistent Query Answering for Self-Join-Free Conjunctive Queries Under Primary Key Constraints. *ACM Trans. Database Syst.* 42, 2 (2017), 9:1–9:45.
- [36] Sebastian Kruse, Paolo Papotti, and Felix Naumann. 2015. Estimating Data Integration and Cleaning Effort. In *EDBT*. OpenProceedings.org, 61–72.
- [37] Ester Livshits, Alireza Heidari, Ihab F. Ilyas, and Benny Kimelfeld. 2020. Approximate Denial Constraints. *Proc. VLDB Endow.* 13, 10 (2020), 1682–1695.
- [38] Ester Livshits and Benny Kimelfeld. 2017. Counting and Enumerating (Preferred) Database Repairs. In *PODS*. ACM, 289–301.
- [39] Ester Livshits and Benny Kimelfeld. 2020. The Shapley Value of Inconsistency Measures for Functional Dependencies. *CoRR* abs/2009.13819 (2020).
- [40] Ester Livshits, Benny Kimelfeld, and Sudeepa Roy. 2020. Computing Optimal Repairs for Functional Dependencies. *ACM Trans. Database Syst.* 45, 1 (2020), 4:1–4:46.
- [41] Ester Livshits, Rina Kochirgan, Segev Tsur, Ihab F. Ilyas, Benny Kimelfeld, and Sudeepa Roy. 2021. Properties of Inconsistency Measures for Databases. *CoRR* abs/1904.06492v3 (2021).
- [42] Andrei Lopatenko and Leopoldo E. Bertossi. 2007. Complexity of Consistent Query Answering in Databases Under Cardinality-Based and Incremental Repair Semantics. In *ICDT*. 179–193.
- [43] Gang Luo, Jeffrey F. Naughton, Curt J. Ellmann, and Michael Watzke. 2004. Toward a Progress Indicator for Database Queries. In *SIGMOD*. 791–802.
- [44] Maria Vanina Martinez, Andrea Pugliese, Gerardo I. Simari, V. S. Subrahmanian, and Henri Prade. 2007. How Dirty Is Your Relational Database? An Axiomatic Approach. In *Symbolic and Quantitative Approaches to Reasoning with Uncertainty*, Khaled Mellouli (Ed.). Springer Berlin Heidelberg, Berlin, Heidelberg, 103–114.
- [45] Brad A. Myers. 1985. The Importance of Percent-done Progress Indicators for Computer-human Interfaces. In *SIGCHI (San Francisco, California, USA) (CHI '85)*. ACM, New York, NY, USA, 11–17.
- [46] Francesco Parisi and John Grant. 2019. Inconsistency Measures for Relational Databases. *CoRR* abs/1904.03403 (2019).
- [47] Eduardo H. M. Pena, Eduardo C. de Almeida, and Felix Naumann. 2019. Discovery of Approximate (and Exact) Denial Constraints. *PVLDB* 13, 3 (2019).
- [48] Theodoros Rekatsinas, Xu Chu, Ihab F. Ilyas, and Christopher Ré. 2017. HoloClean: Holistic Data Repairs with Probabilistic Inference. *PVLDB* 10, 11 (2017), 1190–1201.
- [49] Matthias Thimm. 2017. On the Compliance of Rationality Postulates for Inconsistency Measures: A More or Less Complete Picture. *KI* 31, 1 (2017), 31–39.
- [50] Luca Versari, Daniele De Sensi, Alessio Conte, and Tiziano De Matteis. 2019. parallel enum. [https://github.com/veluca93/parallel\\_enum](https://github.com/veluca93/parallel_enum).
- [51] Ana Villar, Mario Callegaro, and Yongwei Yang. 2013. Where Am I? A Meta-Analysis of Experiments on the Effects of Progress Indicators for Web Surveys. *Soc. Sci. Comput. Rev.* 31, 6 (Dec. 2013), 744–762.
- [52] Jef Wijsen. 2005. Database repairing using updates. *ACM Trans. Database Syst.* 30, 3 (2005), 722–768.
- [53] Bruno Yun, Srdjan Vesic, Madalina Croitoru, and Pierre Bisquert. 2018. Inconsistency Measures for Repair Semantics in OBDA. In *IJCAL*. ijcai.org, 1977–1983.