Overview Talk "Deontic Logics" by Thomas Harms - 4914008

1. Brief Introduction Deontic Logic
    1. SDL
    2. Deontic Operator
    3. Application and intuitive understanding

2. CTD Problems
    1. intuitive introduction
    2. Chisholms Paradox

3. Deon+
    1. Abductive Logic Programming
    2. Constraint Logic Programming
    3. Embedding of ALP and DLP into SDL
    4. Deon+

4. Conclusion

Abstract:

Laws and norms are implemented to specify desired behaviour of a member being part of a contract. This includes human as well as articial beings of a society as agents or group of agents. Therefor deontic concepts and operators have been widely used in order to represent norms in legal reasoning and normative multi-agents systems. On top of Standard Deontic Logic, the modal structure of its operators fits smoothly into abductive semantics and abductive reasoning.
This talk builds upon former works, where mappings of the most common deontic operators (obligation, prohibition, permission) to the abductive expectations of an ALP framework for agent societies has been proposed. This mapping was supported by showing a correspondence between declarative semantics of abductive expectations and Kripke semantics for deontic operators. Building upon these concepts, DEON+ as proposed [1] offers a language where the two basic deontic operators are enriched with quantification over time, by means of ALP and Constraint Logic Programming (CLP).

Sources:
1. Marco Alberti, Marco Gavanelli, Evelina Lamma: "Deon+: Abduction and Constraints for Normative Reasoning"T Chapter out of: A. Artkis, R. Craven, N Kesim, B. Sadighi, K. Stathis: "logic programs, norms and action, Essys in honor of Marek J. Sergot on the occasion of his 60th birthday", Springer 2012, DOI: 10.1007/978-3-642-29414-3_17
2. Tomer Libal, Mateo Pascucci: "Automated Reasoning in Normative Detachment Structures with Ideal Conditions", 10/2018, htp://arxiv.org/pdf/1810.09993
3. Christoph Benzmüller, "Universal (Meta-)Logical Reasoning: Recent Successes", Science of Computer Programming, volume 172, pp. 48-62, 2019. htp://doi.org/10.13140/RG.2.2.11039.61609/2
4. Christoph Benzmüller, Ali Farjami, Xavier Parent, "A Faithful Semantic Embedding of the Dyadic Deontic Logic E in HOL", 2018. htp://christoph-benzmueller.de/papers/R59.pdf
5. Giada Maggenti, Andrea Bracciali, Paolo Mancarella: "Abduction and Legal Reasoning", 2008

6. Christoph Benzmüller, Ali Farjami, Xavier Parent: A Dyadic Deontic Logic in HOL, In Deontic Logic and Normative Systems --- 14th International Conference, DEON 2018, Utrecht, The Netherlands, 3-6 July, 2018 (Jan Broersen, Cleo Condoravdi, Shyam Nair, Gabriella Pigozzi, eds.), College Publications, volume 9706, pp. 33-50, 2018
7. J. Carmo and A.J.I. Jones. Completeness and decidability results for a logic of contrary-toduty conditionals. J. Log. Comput., 23(3):585–626, 2013
8. R.M. Chisholm. Contrary-to-duty imperatives and deontic logic. Analysis, 24:33–36, 1963
9. J. Carmo and A.J.I. Jones. Deontic logic and contrary-to-duties. In D. M. Gabbayand F. Guenthner, editors, Handbook of Philosophical Logic: Volume 8, pages 265–343. Springer Netherlands, Dordrecht, 2002.
10. htps://ptssolutions.com/
11. htp://softpert.com/legal/court-management/winjuris
12. H. Deyoung, D. Garg, D. Kaynar, A. Data: "Logical Seciication of the GLBA and HIPAA Privacy Laws", 04/2010
13. K. Satoh, S. Tojo, Y. Suzuki: "Abductive Reasoning for Burden of Proof", K. Satoh : "New Generation Computing", Volume 30, Issue 4, pp297-326, Springer 2012