Practical Assignment

Human Reasoning and Computational Logic

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In the lecture, a formalization of the abstract and the social case of the selection task has been presented. However, the approach models only the aggregated results and does not take into account the invidual response patterns of the participants in the experiments.

For this assignment, we ask you to consider the non-aggregated results and investigate how to model the different patterns (i.e. the canonical selections: MP, MP+AC, MP+AC+MT and MP+MT)

- within the Weak Completion Semantics and
- motivated by existing cognitive principles or newly developed principles.

You can find more information and ideas in the following papers:

- M. Ragni, I. Kola, and P. Johnson-Laird. The wason selection task: A meta-analysis. In G. Gunzelmann, A. Howes, T. Tenbrink, and E. Davelaar, editors, *Proceedings of the 39th Annual Conference of the Cognitive Science Society, (CogSci 2017)*, pages 980–985. Austin, TX: Cognitive Science Society, 2017.

  `https://mindmodeling.org/cogsci2017/papers/0192/paper0192.pdf`

- M. Ragni, E.-A. Dietz, I. Kola, and S. Hölldobler. Two-valued logic is not sufficient to model human reasoning, but three-valued logic is: A formal analysis. In C. Schon and U. Furbach, editors, *Proceedings of the Workshop on Bridging the Gap between Human and Automated Reasoning co-located with 25th International Joint Conference on Artificial Intelligence (IJCAI 2016), New York, USA*, vol. 1651 of *CEUR Workshop Proceedings*, pages 61–73. CEUR-WS.org, 2016.

  `http://ceur-ws.org/Vol-1651/12340059.pdf`

- P. Johnson-Laird and P. Wason. A theoretical analysis of insight into a reasoning task. 1:134–148, 05 1970.

  `http://mentalmodels.princeton.edu/papers/1970insight.pdf` (Figure 1 and Figure 2)

Please keep in mind the following requirements:

- You can work alone or in groups.
- The tutorial of the **24th of January** is reserved to discuss questions and intermediate results.
- You will have the chance to present your results in the tutorial on the **31st of January**.