

Assumption-Based Argumentation Translated to Argumentation Frameworks

ICCMA 2017 Benchmark Description

Tuomo Lehtonen¹, Johannes P. Wallner², and Matti Järvisalo¹

¹ University of Helsinki, Department of Computer Science, HIIT

² TU Wien, Institute of Information Systems

This benchmark set consists of 426 instances, i.e., argumentation frameworks (AFs) [3] in apx format, obtained from translating instances from assumption-based argumentation (ABA) [1] to AFs.

The ABA benchmark is detailed in [2] and contains 680 ABA frameworks generated via a random generation model with several parameters.³ In particular, the ABA benchmark set includes cyclic and acyclic ABA frameworks. We translated the ABA frameworks to AFs such that reasoning tasks on ABA frameworks can be carried out on the produced AF instances. The translation is presented in [4]. After filtering, including enforcing a time-out on the generation, and restricting to AFs with at most 1500 arguments, this procedure resulted in 426 AFs, among these 236 generated from acyclic ABA frameworks and 190 from cyclic ABA frameworks. The number of arguments in the obtained AF instances range from 15 to 1449 arguments, many of them with a dense attack graph. File names state the parameters used for generation of the original ABA: `afinput_exp_[acyclic|cycles]_[depvary|indvaryV]_stepS_batch_yyyBB` indicating presence of cycles, size and to which series the instance belongs (step `S` and `depvary` or `indvaryV` with $V \in \{1, 2, 3\}$ see [2, Table 11]), and a batch identifier.

Acknowledgements. This work has been funded by the Austrian Science Fund (FWF) through projects I2854 and P30168-N31, and by Academy of Finland through grants 251170 COIN, 276412, and 284591.

References

1. Bondarenko, A., Dung, P.M., Kowalski, R.A., Toni, F.: An abstract, argumentation-theoretic approach to default reasoning. *Artif. Intell.* 93, 63–101 (1997)
2. Craven, R., Toni, F.: Argument graphs and assumption-based argumentation. *Artif. Intell.* 233, 1–59 (2016)
3. Dung, P.M.: On the acceptability of arguments and its fundamental role in non-monotonic reasoning, logic programming and n-person games. *Artif. Intell.* 77(2), 321–358 (1995)
4. Lehtonen, T., Wallner, J.P., Järvisalo, M.: From structured to abstract argumentation: Assumption-based acceptance via af reasoning. In: *Proc. ECSQARU (2017)*, to appear

³ For our benchmark submission to ICCMA’17, we did not include the ten queries per ABA framework that come with the ABA benchmark.