

Credulous Acceptance in High-Order Argumentation Frameworks with Necessities: An Incremental Approach (Abstract Reprint)

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Abstract

Argumentation is an important research area in the field of AI. There is a substantial amount of work on different aspects of Dung’s abstract Argumentation Framework (AF). Two relevant aspects considered separately so far are: (i) extending the framework to account for recursive attacks and supports, and (ii) considering dynamics, i.e., AFs evolving over time. In this paper, we jointly deal with these two aspects. We focus on High-Order Argumentation Frameworks with Necessities (HOAFNs) which allow for attack and support relations (interpreted as necessity) not only between arguments but also targeting attacks and supports at any level. We propose an approach for the incremental evaluation of the credulous acceptance problem in HOAFNs, by “incrementally” computing an extension (a set of accepted arguments, attacks and supports), if it exists, containing a given goal element in an updated HOAFN. In particular, we are interested in monitoring the credulous acceptance of a given argument, attack or support (goal) in an evolving HOAFN. Thus, our approach assumes to have a HOAFN Δ , a goal ρ occurring in Δ , an extension E for Δ containing ρ , and an update u establishing some changes in the original HOAFN, and uses the extension for first checking whether the update is relevant; for relevant updates, an extension of the updated HOAFN containing the goal is computed by translating the problem to the AF domain and leveraging on AF solvers. We provide formal results for our incremental approach and empirically show that it outperforms the evaluation from scratch of the credulous acceptance problem for an updated HOAFN.

References

[Alfano *et al.*, 2024] Gianvincenzo Alfano, Andrea Cohen, Sebastian Gottifredi, Sergio Greco, Francesco Parisi, and Guillermo R. Simari. Credulous acceptance in high-order argumentation frameworks with necessities: An incremental approach. *Artificial Intelligence*, 333:104159, 2024.