

Approximating Problems in Abstract Argumentation with Graph Convolutional Networks (Abstract Reprint)

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Abstract Reprint. This is an abstract reprint of the journal article by Malmqvist, Yuan, and Nightingale (2024).

Abstract

In this article, we present a novel approximation approach for abstract argumentation using a customized Graph Convolutional Network (GCN) architecture and a tailored training method. Our approach demonstrates promising results in approximating abstract argumentation tasks across various semantics, setting a new state of the art for performance on certain tasks. We provide a detailed analysis of approximation and runtime performance and propose a new scheme for evaluation. By advancing the state of the art for approximating the acceptability status of abstract arguments, we make theoretical and empirical advances in understanding the limits and opportunities for approximation in this field. Our approach shows potential for creating both general purpose and task-specific approximators and offers insights into the performance differences across benchmarks and semantics.

References

Malmqvist, L.; Yuan, T.; and Nightingale, P. 2024. Approximating problems in abstract argumentation with graph convolutional networks. *Artificial Intelligence*, 336: 104209.