DialAM Shared Task: A GNN Approach

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Abstract

Your abstract goes here. Briefly summarize the content of the report.

1 Introduction

Argument Mining (AM) has established itself as a vital area of research in NLP [5]. Canonically, the task consists of identifying arguments as constellations of propositions, that is: Identifying the propositional content of natural language expressions and subsequently labelling the propositions as being either premise or conclusion (claim) for the a given argument [5]. Further, one is tasked with establishing semantic relations among these propositions. Relations among propositions give rise to argument structures that are *convergent, serial, linked or divergent*[3]. A serial argument, for example, is a chain of propositions where each proposition[1] supports the one that it "links to". In other cases a proposition might attack another one, only for it to be refuted by a further statement.

While considerable efforts have been devoted towards AM on monological argumentative text in written form, Ruiz-Dolz et al. [4] call for attention towards AM of dialogical, spoken data. They organise the *First Task on Dialogical Argument* mining and invite participants to submit AM systems capable classifying relations between propositions, as well as grounding these propositions in locutions through illocutionary force relations, as we discuss in more detail in section 2.

A review of participant contributions allows us to conclude that most systems frame the dialogical argument mining task as a relation identification and classification task. By linearising neighbouring node texts and encoding the text with special tokens the winning team, Binder et al. [1], achieves 78.78% on general relation identification between propositional nodes and 55.33% is achieved in the identification of relations that hold between propositions and their locutionary counterparts.

Since the task dataset, compiled by Hautli-Janisz et al. [2] is graph-structured, in the present paper I ask: Is a GNN-approach, that is, one that is architecturally more assimilated to the task dataset, a viable architecture for the task of dialogical AM?

The main contributions are:

1.

2 Background

Argumentation Mining

Relation Extraction

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[1]except for the first, which could be considered the *main conclusion*

Graph Neural Networks   This is where the main content of your report goes.

3   Method

Task.

Evaluation.   CASS-method, we focus on the general score here.

Architecture of the NN.   ...

Normalisation.

Data Balancing.

4   Results & Discussion

5   Conclusion

Your conclusion goes here. Let's reference someone.

References

[1] A. Binder, T. Anikina, L. Hennig, and S. Ostermann. DFKI-MLST at DialAM-2024 Shared Task: System Description. In Y. Ajjour, R. Bar-Haim, R. El Baff, Z. Liu, and G. Skitalinskaya, editors, *Proceedings of the 11th Workshop on Argument Mining (ArgMining 2024)*, pages 93–102, Bangkok, Thailand, Aug. 2024. Association for Computational Linguistics. doi: 10.18653/v1/2024.argmining-1.9. URL https://aclanthology.org/2024.argmining-1.9.

[2] A. Hautli-Janisz, Z. Kikteva, W. Siskou, K. Gorska, R. Becker, and C. Reed. QT30: A Corpus of Argument and Conflict in Broadcast Debate. In N. Calzolari, F. Béchet, P. Blache, K. Choukri, C. Cieri, T. Declerck, S. Goggi, H. Isahara, B. Maegaard, J. Mariani, H. Mazo, J. Odijk, and S. Piperidis, editors, *Proceedings of the Thirteenth Language Resources and Evaluation Conference*, pages 3291–3300, Marseille, France, June 2022. European Language Resources Association. URL https://aclanthology.org/2022.lrec-1.352.

[3] J. Lawrence and C. Reed. Argument Mining: A Survey. *Computational Linguistics*, 45(4):765–818, Dec. 2019. doi: 10.1162/coli_a_00364. URL https://aclanthology.org/J19-4006. Place: Cambridge, MA Publisher: MIT Press.

[4] R. Ruiz-Dolz, J. Lawrence, E. Schad, and C. Reed. Overview of DialAM-2024: Argument Mining in Natural Language Dialogues. In Y. Ajjour, R. Bar-Haim, R. El Baff, Z. Liu, and G. Skitalinskaya, editors, *Proceedings of the 11th Workshop on Argument Mining (ArgMining 2024)*, pages 83–92, Bangkok, Thailand, Aug. 2024. Association for Computational Linguistics. doi: 10.18653/v1/2024.argmining-1.8. URL https://aclanthology.org/2024.argmining-1.8.

[5] M. Stede, J. Schneider, and G. Hirst. *Argumentation mining*. Springer, 2019.