ISCL Hauptseminar (Summer semester 2021, Meurers)

Computational linguistic analysis of discourse and argumentation

Abstract:

Reflecting the substantial interest in analyzing language beyond the sentence level, this seminar provides an overview of the different approaches to analyzig discourse structure and argumentation. Computational linguistic research on dialogue and discourse structure has produced multi-layer corpus annotation efforts such as NXT Switchboard or the Penn Discourse Treebank. Applications include dialogue systems and argumentation mining.

Instructor: Prof. Dr. Detmar Meurers

- *Office:* http://purl.org/dm/zoom
- *Office hours:* Tuesdays 14:00–16:00 (please arrange slot by email beforehand)

Course meets: 4 SWS

- Tuesdays and Thursdays 8–10
- In Zoom: https://zoom.us/j/96719107835

Credit Points:

- Core Computatonal Linguistics Hauptseminar with 6 or, with term paper, 9 CP.

Syllabus: http://purl.org/dm/21/ss/hs (http://purl.org/dm/21/ss/hs/syllabus.pdf)

Moodle page: https://moodle.zdv.uni-tuebingen.de/course/view.php?id=1679

Please enroll in this course by logging into this moodle course with your ordinary ZDV university login.

Nature of course and our expectations: This is an overview-oriented Hauptseminar, in which we jointly introduce and explore the topic, perspectives and approaches. You are expected to

1. regularly and actively participate in class, with everyone's camera turned on to allow for meaningful two-way interaction in class, read the papers assigned by any of the presenters and post a meaningful question on Moodle to the "Discussion Forum" on each reading *at the latest on the day before it is discussed* in class.

2. explore and present a topic:

   - select one of the sub-topics by the May 6
   - thoroughly research the topic, mainly based on the mentioned reference
   - prepare the presentation with slides, send them to me by email and discuss them with me in a half hour slot during my office hour *at least a week before the presentation*

- start a new Moodle thread on the "Discussion Forum" specifying what every course participant should read to prepare for your presentation *a week before your presentation*
- present and discuss the topic in class

3. if you pursue the 9 CP option, work out a project term paper

   - *by July 16* select a topic and submit a one-page abstract (and a revised version by July 29, 2021)
   - *by October 24, 2021, i.e., by the beginning of the next semester* email the term paper in pdf format to the instructor.
     - Note for Computational Linguistics students: The term paper must be produced in LaTeX using the ACL conference format or the Computational Linguistics journal format; BibTeX must be used for the bibliography.

Academic conduct and misconduct: Research is driven by discussion and free exchange of ideas, motivations, and perspectives. So you are encouraged to work in groups, discuss, and exchange ideas. At the same time, the foundation of the free exchange of ideas is that everyone is open about where they obtained which information. Concretely, this means you are expected to always make explicit when you've worked on something as a team – and keep in mind that being part of a team always means sharing the work.

For text you write, you always have to provide explicit references for any ideas or passages you reuse from somewhere else. Note that this includes text "found" on the web, where you should cite the url of the web site in case no more official publication is available.

Sessions

1. Introduction (Detmar)
2. 11.5. RST (Detmar)
3. 18.5. RST (Pia)
4. 20.5. QUD and Information Structure (Detmar, Kordula)
5. 1.6 PDT (Lorena)
6. 8.6. SDRT (Lukas)
    - (Stede et al. 2016)
7. 10.6. Speech Act Annotation (Mourhaf)
8. 15.6. Analyzing Dialogue (Siena)
    - RST extension for dialogue (Stent 2000)
    - ISO (Bunt et al. 2020) and early work (Bunt 2006)
    - situated multiparty chats using SDRT (Asher et al. 2020)
    - (Tonelli et al. 2010)
    - human-computer dialogues (Yu & Yu 2019)
9. 22.6. Analyzing Dialogue (Luisa)
10. 24.6. Cohesion (Nora)
11. 29.6 Prague Dependency Treebank (Julia)
12. 1.7. Argumentation (Leyre)
13. 6.7. Argumentation (Fidan)
14. 13.7. Argumentation (Leixin)
15. 15.7. Discourse in (language) learning context (Bastian)
16. 20.7. Comparison and Evaluation of approaches (Mayank)
17. 22.7. Comparison and Evaluation of approaches (Connor)
18. 27.7. term paper idea presentations
19. 29.7. term paper idea presentations

Topics

- RST (Stede 2004; Carlson et al. 2003; Morey et al. 2017, 2018; Taboada & Mann 2006)
  - connection to argumentation (Peldszus & Stede 2016)
  - ANNODIS (Asher et al. 2017)
  - comparison to SDRT (Stede et al. 2016)
  - comparison to Penn Discourse and OntoNotes (Chiarcos 2014)
- SDRT (Lascarides & Asher 2008; Afantenos & Asher 2010; Afantenos et al. 2012; Asher et al. 2020)
- Questions under Discussion (Riester et al. 2018; De Kuthy et al. 2018; Reyle & Riester 2016)
- Speech Act Annotation (Weisser 2014)
- Dialog Act Annotation (Bunt 2006)
- Penn Discourse Treebank (Prasad et al. 2004, 2017, 2018)
  - extraction from student essays (Forbes-Riley et al. 2016)
  - for Turkish (Demirşahin & Zeyrek 2017)
  - mulitlingual (Zeyrek et al. 2019)
- Discourse annotation in Prague Dependency Treebank (Zikánová et al. 2010; Poláková et al. 2013)
- comparisons/evaluation (Carletta et al. 1997; Stede et al. 2007; Benamara & Taboada 2015; Stede et al. 2016; Hoek & Scholman 2017)
  - Empirical studies in discourse perspective (Walker & Moore 1997)
  - Overview esp. for multiparty dialogue (Core et al. 1998)
- Information Structure
  - (Kruijff-Korbayová & Kruijff 2004)
  - Focus annotation (Ziai & Meurers 2018)
  - Information Status (Eckart et al. 2012)
  - Switchboard (Calhoun et al. 2010; Calhoun 2007),
  - Evaluation (Ritz et al. 2008)
  - Crowdsourcing (De Kuthy et al. 2016)
- Cohesion
  - CohMetrix (McNamara et al. 2010; Graesser et al. 2012)
  - CohViz (Burkhart et al. 2020b,a)

- Argumentation
  - annotation (Visser et al. 2020; Saint-Dizier 2012)
  - argumentation mining (Nguyen & Litman 2016; Lawrence & Reed 2020; Mochales & Moens 2011)
  - Argument component/unit segmentation (Ajjour et al. 2017; Alhindi & Ghosh 2021), discourse segmentation and coference (Tetreault et al. 2004)
  - ArgRewrite (Zhang et al. 2016)
  - eRevis (Wang et al. 2020)
  - visual interactive annotation (Sperrle et al. 2019)
  - more fine-grained proposition types (Jo et al. 2020)
  - assessment of approaches (Lindahl et al. 2019; Wachsmuth et al. 2017b,a)
  - corpus for argumentation analysis (Wachsmuth et al. 2014)
  - newspaper editorials (Al Khatib et al. 2016)
  - relation of theories to real-life argumentation in law domain (Mochales & Ieven 2009; Palau & Moens 2009)
  - in student essays (Wachsmuth et al. 2016; Putra et al. 2021) and persuasive essays (Stab & Gurevych 2017)
  - the contribution of argumentation mining to automatic essay scoring (Persing & Ng 2015)
  - more work on Argumentative Zoning (Teufel et al. 1999b; Teufel & Moens 2002; Teufel et al. 2009), and https://www.cl.cam.ac.uk/~sht25/az.html
  - Evaluating AntMover, AWA, and AcaWriter, and RWT on a joint corpus ressource (Knight et al. 2020)
  - in scientific articles (Teufel et al. 1999a; Teufel & Moens 1999; Liakata et al. 2012; Kirschner et al. 2015)
  - in social media (Lindahl 2020) and user-generated web discourse (Habernal & Gurevych 2017)
  - Overview of challenges in multiparty dialogue (Core et al. 1998) j
  - in relation to sentiment analysis (Stede 2020)
- Other Corpora
  - GNOME corpus (Poesio 2004)
  - Potsdam Commentary Corpus (Stede & Neumann 2014)

References

Afantenos, S. & N. Asher (2010). Testing SDRT's Right Frontier. In *Proceedings of the 23rd International Conference on Computational Linguistics (Coling 2010)*. Beijing, China: Coling 2010 Organizing Committee, pp. 1–9. URL https://www.aclweb.org/anthology/C10-1001.

Afantenos, S., N. Asher et al. (2012). An empirical resource for discovering cognitive principles of discourse organisation: the ANNODIS corpus. In *Proceedings of the Eighth International Conference on Language Resources and Evaluation (LREC'12)*. Istanbul, Turkey: European Language Resources Association (ELRA), pp. 2727–2734. URL http://www.lrec-conf.org/proceedings/lrec2012/pdf/836_Paper.pdf.

Ajjour, Y., W.-F. Chen, J. Kiesel, H. Wachsmuth & B. Stein (2017). Unit segmentation of argumentative texts. In *Proceedings of the 4th Workshop on Argument Mining*. pp. 118–128.

Al Khatib, K., H. Wachsmuth, J. Kiesel, M. Hagen & B. Stein (2016). A news editorial corpus for mining argumentation strategies. In *Proceedings of COLING 2016, the 26th International Conference on Computational Linguistics: Technical Papers*. pp. 3433–3443.

Alhindi, T. & D. Ghosh (2021). "Sharks are not the threat humans are": Argument Component Segmentation in School Student Essays. In *Proceedings of the 16th Workshop on Innovative Use of NLP for Building Educational Applications*. Online: Association for Computational Linguistics, pp. 210–222. URL https://www.aclweb.org/anthology/2021.bea-1.22.

Asher, N., J. Hunter & K. Thompson (2020). Modeling Structures for Situated Discourse. *Dialogue & Discourse* 11(1), 89–121. URL http://dx.doi.org/10.5087/dad.2020.104.

Asher, N., P. Muller, M. Bras, L. M. Ho-Dac, F. Benamara, S. Afantenos & L. Vieu (2017). ANNODIS and related projects: case studies on the annotation of discourse structure. In *Handbook of Linguistic Annotation*, Springer, pp. 1241–1264.

Benamara, F. & M. Taboada (2015). Mapping different rhetorical relation annotations: A proposal. In *Fourth Joint Conference on Lexical and Computational Semantics (* SEM 2015)*. pp. 147–152.

Bunt, H. (2006). Dimensions in Dialogue Act Annotation. In *LREC*. pp. 919–924.

Bunt, H., V. Petukhova, E. Gilmartin, C. Pelachaud, A. Fang, S. Keizer & L. Prevot (2020). The iso standard for dialogue act annotation. In *Proceedings of the 12th Language Resources and Evaluation Conference*. pp. 549–558.

Burkhart, C., A. Lachner & M. Nückles (2020a). Assisting students' writing with computer-based concept map feedback: A validation study of the CohViz feedback system. *PloS one* 15(6), e0235209.

Burkhart, C., A. Lachner & M. Nückles (2020b). Using spatial contiguity and signaling to optimize visual feedback on students' written explanations. *Journal of Educational Psychology* .

Calhoun, S. (2007). Predicting Focus through Prominence Structure. In *Proceedings of Interspeech*. Antwerp, Belgium. URL http://www.cstr.inf.ed.ac.uk/downloads/publications/2007/calhounIS07.pdf.

Calhoun, S., J. Carletta, J. Brenier, N. Mayo, D. Jurafsky, M. Steedman & D. Beaver (2010). The NXT-format Switchboard Corpus: A Rich Resource for Investigating the Syntax, Semantics, Pragmatics and Prosody of Dialogue. *Language Resources and Evaluation* 44, 387–419. URL http://link.springer.com/article/10.1007%2Fs10579-010-9120-1.

Carletta, J., A. Isard, S. Isard, J. C. Kowtko, G. Doherty-Sneddon & A. H. Anderson (1997). The Reliability of a Dialogue Structure Coding Scheme. *Computational Linguistics* 23(1), 13–31. URL https://www.aclweb.org/anthology/J97-1002.

Carlson, L., D. Marcu & M. E. Okurowski (2003). Building a discourse-tagged corpus in the framework of rhetorical structure theory. In *Current and new directions in discourse and dialogue*, Springer, pp. 85–112.

Chiarcos, C. (2014). Towards interoperable discourse annotation. Discourse features in the Ontologies of Linguistic Annotation. In *Proceedings of the Ninth International Conference on Language Resources and Evaluation (LREC'14)*. Reykjavik, Iceland: European Language Resources Association (ELRA), pp. 4569–4577. URL http://www.lrec-conf.org/proceedings/lrec2014/pdf/893_Paper.pdf.

Core, M., M. Ishizaki, J. Moore, C. Nakatani, N. Reithinger, D. Traum & S. Tutiya (1998). *The Report of The Third Workshop of the Discourse Resource Initiative*. Tech. rep., Chiba University

and Kazusa Academia Hall.

De Kuthy, K., N. Reiter & A. Riester (2018). QUD-Based Annotation of Discourse Structure and Information Structure: Tool and Evaluation. In *Proceedings of the 11th Language Resources and Evaluation Conference*. Miyazaki, JP.

De Kuthy, K., R. Ziai & D. Meurers (2016). Focus Annotation of Task-Based Data: Establishing the Quality of Crowd Annotation. In *Proceedings of the 10th Linguistic Annotation Workshop held in conjunction with ACL 2016 (LAW-X 2016)*. Berlin, Germany: ACL, pp. 110–119. URL http://aclweb.org/anthology/W16-1713.pdf.

Demirşahin, I. & D. Zeyrek (2017). Pair annotation as a novel annotation procedure: The case of Turkish Discourse Bank. In *Handbook of linguistic annotation*, Springer, pp. 1219–1240.

Eckart, K., A. Riester & K. Schweitzer (2012). A Discourse Information Radio News Database for Linguistic Analysis. In C. Chiarcos, S. Nordhoff & S. Hellmann (eds.), *Linked Data in Linguistics*, Berlin, Heidelberg: Springer, pp. 65–76. URL http://dx.doi.org/10.1007/978-3-642-28249-2_7.

Forbes-Riley, K., F. Zhang & D. Litman (2016). Extracting PDTB discourse relations from student essays. In *Proceedings of the 17th Annual Meeting of the Special Interest Group on Discourse and Dialogue*. pp. 117–127.

Graesser, A. C., D. S. McNamara & J. M. Kulikowich (2012). Coh-Metrix: Providing Multilevel Analyses of Text Characteristics. *Educational Researcher* 40(5), 223–234.

Habernal, I. & I. Gurevych (2017). Argumentation mining in user-generated web discourse. *Computational Linguistics* 43(1), 125–179.

Hoek, J. & M. Scholman (2017). Evaluating discourse annotation: Some recent insights and new approaches. In *Proceedings of the 13th Joint ISO-ACL Workshop on Interoperable Semantic Annotation (ISA-13)*. URL https://www.aclweb.org/anthology/W17-7401.

Jo, Y., E. Mayfield, C. Reed & E. Hovy (2020). Machine-Aided Annotation for Fine-Grained Proposition Types in Argumentation. In *Proceedings of The 12th Language Resources and Evaluation Conference*. pp. 1008–1018.

Kirschner, C., J. Eckle-Kohler & I. Gurevych (2015). Linking the thoughts: Analysis of argumentation structures in scientific publications. In *Proceedings of the 2nd Workshop on Argumentation Mining*. pp. 1–11.

Knight, S., S. Abel et al. (2020). Are you being rhetorical? An open corpus of machine annotated rhetorical moves. *Journal of Learning Analytics* 7(3), 138–154.

Kruijff-Korbayová, I. & G.-J. M. Kruijff (2004). Discourse-level Annotation for Investigating Information Structure. In B. Webber & D. K. Byron (eds.), *ACL 2004 Workshop on Discourse Annotation*. Barcelona, Spain: Association for Computational Linguistics, pp. 41–48. URL http://aclweb.org/anthology-new/W/W04/W04-0206.pdf.

Lascarides, A. & N. Asher (2008). Segmented discourse representation theory: Dynamic semantics with discourse structure. In *Computing meaning*, Springer, pp. 87–124. URL https://link.springer.com/content/pdf/10.1007/978-1-4020-5958-2_5.pdf.

Lawrence, J. & C. Reed (2020). Argument mining: A survey. *Computational Linguistics* 45(4), 765–818.

Liakata, M., P. Thompson, A. de Waard, R. Nawaz, H. Pander Maat & S. Ananiadou (2012). A three-way perspective on scientific discourse annotation for knowledge extraction. In *Proceedings of the Workshop on Detecting Structure in Scholarly Discourse*. Jeju Island, Korea: Association for Computational Linguistics, pp. 37–46. URL https://www.aclweb.org/anthology/W12-4305.

Lindahl, A. (2020). Annotating argumentation in Swedish social media. In *Proceedings of the 7th Workshop on Argument Mining*. pp. 100–105.

Lindahl, A., L. Borin & J. Rouces (2019). Towards assessing argumentation annotation-a first step. In *Proceedings of the 6th Workshop on Argument Mining*. pp. 177–186.

McNamara, D. S., M. M. Louwerse, P. M. McCarthy & A. C. Graesser (2010). Coh-Metrix: Capturing Linguistic Features of Cohesion. *Discourse Processes* 47(4), 292–330. URL https:

//umdrive.memphis.edu/pmmccrth/public/Papers/DP_Cohesion%20%28McNamara%29.doc.

Mochales, R. & A. Ieven (2009). Creating an argumentation corpus: do theories apply to real arguments? A case study on the legal argumentation of the ECHR. In *Proceedings of the 12th international conference on artificial intelligence and law*. pp. 21–30.

Mochales, R. & M.-F. Moens (2011). Argumentation mining. *Artificial Intelligence and Law* 19(1), 1–22.

Morey, M., P. Muller & N. Asher (2017). How much progress have we made on RST discourse parsing? A replication study of recent results on the RST-DT. In *Conference on Empirical Methods on Natural Language Processing (EMNLP 2017)*. pp. pp–1330.

Morey, M., P. Muller & N. Asher (2018). A dependency perspective on RST discourse parsing and evaluation. *Computational Linguistics* 44(2), 197–235.

Nguyen, H. & D. Litman (2016). Context-aware argumentative relation mining. In *Proceedings of the 54th Annual Meeting of the Association for Computational Linguistics (Volume 1: Long Papers)*. pp. 1127–1137.

Palau, R. M. & M.-F. Moens (2009). Argumentation Mining: The Detection, Classification and Structure of Arguments in Text. In *Proceedings of the 12th International Conference on Artificial Intelligence and Law*. New York, NY, USA: Association for Computing Machinery, ICAIL '09, p. 98–107. URL https://doi.org/10.1145/1568234.1568246.

Peldszus, A. & M. Stede (2016). Rhetorical structure and argumentation structure in monologue text. In *Proceedings of the Third Workshop on Argument Mining (ArgMining2016)*. pp. 103–112.

Persing, I. & V. Ng (2015). Modeling argument strength in student essays. In *Proceedings of the 53rd Annual Meeting of the Association for Computational Linguistics and the 7th International Joint Conference on Natural Language Processing (Volume 1: Long Papers)*. pp. 543–552.

Poesio, M. (2004). Discourse Annotation and Semantic Annotation in the GNOME corpus. In *Proceedings of the Workshop on Discourse Annotation*. Barcelona, Spain: Association for Computational Linguistics, pp. 72–79. URL https://www.aclweb.org/anthology/W04-0210.

Poláková, L., J. Mírovskỳ, A. Ne doluzhko, P. Jínová, Š. Zikánová & E. Hajicová (2013). Introducing the Prague Discourse Treebank 1.0. In *Proceedings of the Sixth International Joint Conference on Natural Language Processing*. pp. 91–99.

Prasad, R., E. Miltsakaki, A. Joshi & B. Webber (2004). Annotation and Data Mining of the Penn Discourse TreeBank. In *Proceedings of the Workshop on Discourse Annotation*. Barcelona, Spain: Association for Computational Linguistics, pp. 88–95. URL https://www.aclweb.org/anthology/W04-0212.

Prasad, R., B. Webber & A. Joshi (2017). The Penn Discourse Treebank: An annotated corpus of discourse relations. In *Handbook of linguistic annotation*, Springer, pp. 1197–1217.

Prasad, R., B. Webber & A. Lee (2018). Discourse Annotation in the PDTB: The Next Generation. In *Proceedings 14th Joint ACL - ISO Workshop on Interoperable Semantic Annotation*. Santa Fe, New Mexico, USA: Association for Computational Linguistics, pp. 87–97. URL https://www.aclweb.org/anthology/W18-4710.

Putra, J. W. G., S. Teufel & T. Tokunaga (2021). Parsing Argumentative Structure in English-as-Foreign-Language Essays. In *Proceedings of the 16th Workshop on Innovative Use of NLP for Building Educational Applications*. Online: Association for Computational Linguistics, pp. 97–109. URL https://www.aclweb.org/anthology/2021.bea-1.10.

Reyle, U. & A. Riester (2016). Joint information structure and discourse structure analysis in an Underspecified DRT framework. In J. Hunter, M. Simons & M. Stone (eds.), *Proceedings of the 20th Workshop on the Semantics and Pragmatics of Dialogue (JerSem)*. New Brunswick, NJ, pp. 15–24.

Riester, A., L. Brunetti & K. De Kuthy (2018). Annotation Guidelines for Questions under Discussion and Information Structure. In E. Adamou, K. Haude & M. Vanhove (eds.), *Information structure in lesser-described languages: Studies in prosody and syntax*, John Benjamins, Studies in Language Companion Series.

Ritz, J., S. Dipper & M. Götze (2008). Annotation of Information Structure: An Evaluation Across Different Types of Texts. In *Proceedings of the 6th International Conference on Language Resources and Evaluation*. Marrakech, Morocco, pp. 2137–2142. URL http://www.lrec-conf.org/proceedings/lrec2008/pdf/543_paper.pdf.

Saint-Dizier, P. (2012). Processing natural language arguments with the "TextCoop" platform. *Argument & Computation* 3(1), 49–82.

Sperrle, F., R. Sevastjanova, R. Kehlbeck & M. El-Assady (2019). Viana: Visual interactive annotation of argumentation. In *2019 IEEE Conference on Visual Analytics Science and Technology (VAST)*. IEEE, pp. 11–22.

Stab, C. & I. Gurevych (2017). Parsing argumentation structures in persuasive essays. *Computational Linguistics* 43(3), 619–659.

Stede, M. (2004). The Potsdam Commentary Corpus. In *Proceedings of the 2004 ACL Workshop on Discourse Annotation*. Stroudsburg, PA, USA: Association for Computational Linguistics, pp. 96–102. URL http://dl.acm.org/citation.cfm?id=1608938.1608951.

Stede, M. (2020). Automatic argumentation mining and the role of stance and sentiment. *Journal of Argumentation in Context* 9(1), 19–41.

Stede, M., S. Afantenos, A. Peldszus, N. Asher & J. Perret (2016). Parallel Discourse Annotations on a Corpus of Short Texts. In *Proceedings of the Tenth International Conference on Language Resources and Evaluation (LREC'16)*. Portorož, Slovenia: European Language Resources Association (ELRA), pp. 1051–1058. URL https://www.aclweb.org/anthology/L16-1167.

Stede, M. & A. Neumann (2014). Potsdam Commentary Corpus 2.0: Annotation for Discourse Research. In *Proceedings of the Ninth International Conference on Language Resources and Evaluation (LREC'14)*. Reykjavik, Iceland: European Language Resources Association (ELRA), pp. 925–929. URL http://www.lrec-conf.org/proceedings/lrec2014/pdf/579_Paper.pdf.

Stede, M., J. Wiebe, E. Hajičová, B. Reese, S. Teufel, B. Webber & T. Wilson (2007). Discourse Annotation Working Group Report. In *Proceedings of the Linguistic Annotation Workshop*. Prague, Czech Republic: Association for Computational Linguistics, pp. 191–196. URL https://www.aclweb.org/anthology/W07-1530.

Stent, A. (2000). Rhetorical structure in dialog. In *INLG'2000 Proceedings of the First International Conference on Natural Language Generation*. pp. 247–252.

Taboada, M. & W. C. Mann (2006). Applications of Rhetorical Structure Theory. *Discourse Studies* 8(4), 567–588. URL https://doi.org/10.1177/1461445606064836.

Tetreault, J., M. Swift, P. Prithviraj, M. Dzikovska & J. Allen (2004). Discourse Annotation in the Monroe Corpus. In *Proceedings of the Workshop on Discourse Annotation*. Barcelona, Spain: Association for Computational Linguistics, pp. 103–109. URL https://www.aclweb.org/anthology/W04-0214.

Teufel, S., J. Carletta & M. Moens (1999a). An annotation scheme for discourse-level argumentation in research articles. In *Ninth Conference of the European Chapter of the Association for Computational Linguistics*.

Teufel, S. & M. Moens (1999). Discourse-level argumentation in scientific articles: human and automatic annotation. In *Towards Standards and Tools for Discourse Tagging*.

Teufel, S. & M. Moens (2002). Summarizing scientific articles: experiments with relevance and rhetorical status. *Computational linguistics* 28(4), 409–445.

Teufel, S., A. Siddharthan & C. Batchelor (2009). Towards domain-independent argumentative zoning: Evidence from chemistry and computational linguistics. In *Proceedings of the 2009 conference on empirical methods in natural language processing*. pp. 1493–1502.

Teufel, S. et al. (1999b). Argumentative zoning: Information extraction from scientific text. Ph.D. thesis, Edinburgh. URL https://www.cl.cam.ac.uk/~sht25/thesis/t.pdf.

Tonelli, S., G. Riccardi, R. Prasad & A. K. Joshi (2010). Annotation of Discourse Relations for Conversational Spoken Dialogs. In *LREC*.

Visser, J., J. Lawrence, C. Reed, J. Wagemans & D. Walton (2020). Annotating argument schemes.

Argumentation pp. 1–39.

Wachsmuth, H., K. Al Khatib & B. Stein (2016). Using argument mining to assess the argumentation quality of essays. In *Proceedings of COLING 2016, the 26th International Conference on Computational Linguistics: Technical Papers*. pp. 1680–1691.

Wachsmuth, H., N. Naderi, I. Habernal, Y. Hou, G. Hirst, I. Gurevych & B. Stein (2017a). Argumentation quality assessment: Theory vs. practice. In *Proceedings of the 55th Annual Meeting of the Association for Computational Linguistics (Volume 2: Short Papers)*. pp. 250–255.

Wachsmuth, H., N. Naderi, Y. Hou, Y. Bilu, V. Prabhakaran, T. A. Thijm, G. Hirst & B. Stein (2017b). Computational argumentation quality assessment in natural language. In *Proceedings of the 15th Conference of the European Chapter of the Association for Computational Linguistics: Volume 1, Long Papers*. pp. 176–187.

Wachsmuth, H., M. Trenkmann, B. Stein, G. Engels & T. Palakarska (2014). A review corpus for argumentation analysis. In *International Conference on Intelligent Text Processing and Computational Linguistics*. Springer, pp. 115–127.

Walker, M. & J. D. Moore (1997). Empirical studies in discourse. *Computational Linguistics* 23(1), 1–12.

Wang, E. L., L. C. Matsumura, R. Correnti, D. Litman, H. Zhang, E. Howe, A. Magooda & R. Quintana (2020). eRevis (ing): Students' revision of text evidence use in an automated writing evaluation system. *Assessing Writing* 44, 100449.

Weisser, M. (2014). Speech act annotation. *Corpus pragmatics: A handbook* pp. 84–116.

Yu, D. & Z. Yu (2019). Midas: A dialog act annotation scheme for open domain human machine spoken conversations. *arXiv preprint arXiv:1908.10023* .

Zeyrek, D., A. Mendes, Y. Grishina, M. Kurfalı, S. Gibbon & M. Ogrodniczuk (2019). TED Multilingual Discourse Bank (TED-MDB): A parallel corpus annotated in the PDTB style. *Language Resources and Evaluation* pp. 1–27.

Zhang, F., R. Hwa, D. Litman & H. B. Hashemi (2016). Argrewrite: A web-based revision assistant for argumentative writings. In *Proceedings of the 2016 conference of the north american chapter of the association for computational linguistics: Demonstrations*. pp. 37–41.

Ziai, R. & D. Meurers (2018). Automatic Focus Annotation: Bringing Formal Pragmatics Alive in Analyzing the Information Structure of Authentic Data. In *Proceedings of the 16th Annual Conference of the North American Chapter of the Association for Computational Linguistics: Human Language Technologies (NAACL-HLT)*. New Orleans, LA: ACL, pp. 117–128. URL http://aclweb.org/anthology/N18-1011.pdf.

Zikánová, Š., L. Mladová, J. Mírovský & P. Jínová (2010). Typical Cases of Annotators' Disagreement in Discourse Annotations in Prague Dependency Treebank. In *Proceedings of the Seventh International Conference on Language Resources and Evaluation (LREC'10)*. Valletta, Malta: European Language Resources Association (ELRA). URL http://www.lrec-conf.org/proceedings/lrec2010/pdf/762_Paper.pdf.