















- [6] Sepp Hochreiter and Jürgen Schmidhuber. 1997. Long Short-Term Memory. *Neural Comput.* 9, 8 (Nov. 1997), 1735–1780. <https://doi.org/10.1162/neco.1997.9.8.1735>
- [7] Konrad Höffner, Sebastian Walter, Edgard Marx, Ricardo Usbeck, Jens Lehmann, and Axel-Cyrille Ngonga Ngomo. 2017. Survey on challenges of question answering in the semantic web. *Semantic Web* 8, 6 (2017), 895–920.
- [8] Yuchul Jung, Jihee Ryu, Kyung-min Kim, and Sung-Hyon Myaeng. 2010. Automatic Construction of a Large-scale Situation Ontology by Mining How-to Instructions from the Web. *Web Semant.* 8, 2-3 (July 2010), 110–124. <https://doi.org/10.1016/j.websem.2010.04.006>
- [9] Yoon Kim. 2014. Convolutional neural networks for sentence classification. In *Proceedings of Conference on Empirical Methods in Natural Language Processing (EMNLP '14)*. 1746–1751.
- [10] Diederik Kingma and Jimmy Ba. 2014. Adam: A method for stochastic optimization. *arXiv preprint arXiv:1412.6980* (2014).
- [11] Man Lan, Jianxiang Wang, Yuanbin Wu, Zheng-Yu Niu, and Haifeng Wang. 2017. Multi-task Attention-based Neural Networks for Implicit Discourse Relationship Representation and Identification. In *Proceedings of the 2017 Conference on Empirical Methods in Natural Language Processing*. 1299–1308.
- [12] Lijun Mei, Qicheng Li, Rangachari Anand, Juhnyoung Lee, Feng Li, and Shaochun Li. 2014. Enabling customizable service-based procedural knowledge applications—An service-orientation for Dialog Manager. In *Service Operations and Logistics, and Informatics (SOLI), 2014 IEEE International Conference on*. IEEE, 412–417.
- [13] Alexander Miller, Adam Fisch, Jesse Dodge, Amir-Hossein Karimi, Antoine Bordes, and Jason Weston. 2016. Key-value memory networks for directly reading documents. *arXiv preprint arXiv:1606.03126* (2016).
- [14] Makoto Miwa and Mohit Bansal. 2016. End-to-end Relation Extraction using LSTMs on Sequences and Tree Structures. *Proceedings of ACL* (2016).
- [15] Hamid R. Motahari Nezhad, Kalpa Gunaratna, and Juan Cappi. 2017. eAssistant: Cognitive Assistance for Identification and Auto-Triage of Actionable Conversations. In *Proceedings of the 26th International Conference on World Wide Web Companion (WWW '17 Companion)*. International World Wide Web Conferences Steering Committee, Republic and Canton of Geneva, Switzerland, 89–98. <https://doi.org/10.1145/3041021.3054147>
- [16] Nanyun Peng, Hoifung Poon, Chris Quirk, Kristina Toutanova, and Wen-tau Yih. 2017. Cross-Sentence N-ary Relation Extraction with Graph LSTMs. *Transactions of the Association for Computational Linguistics* 5 (2017), 101–115.
- [17] Jeffrey Pennington, Richard Socher, and Christopher Manning. 2014. Glove: Global vectors for word representation. In *Proceedings of the 2014 conference on empirical methods in natural language processing (EMNLP)*. 1532–1543.
- [18] Chris Quirk and Hoifung Poon. 2017. Distant supervision for relation extraction beyond the sentence boundary. *Proceedings of ACL* (2017), 1171–1182.
- [19] Samuel Rönnqvist, Niko Schenk, and Christian Chiarcos. 2017. A Recurrent Neural Model with Attention for the Recognition of Chinese Implicit Discourse Relations. In *Proceedings of the 55th Annual Meeting of the Association for Computational Linguistics (Volume 2: Short Papers)*. Association for Computational Linguistics, 256–262. <https://doi.org/10.18653/v1/P17-2040>
- [20] Adam Santoro, Sergey Bartunov, Matthew Botvinick, Daan Wierstra, and Timothy Lillicrap. 2016. One-shot learning with memory-augmented neural networks. *arXiv preprint arXiv:1605.06065* (2016).
- [21] Michael Schmitz, Robert Bart, Stephen Soderland, Oren Etzioni, et al. 2012. Open language learning for information extraction. In *Proceedings of the 2012 Joint Conference on Empirical Methods in Natural Language Processing and Computational Natural Language Learning*. Association for Computational Linguistics, 523–534.
- [22] Pol Schumacher and Mirjam Minor. 2014. Extracting control-flow from text. In *Information Reuse and Integration (IRI), 2014 IEEE 15th International Conference on*. IEEE, 203–210.
- [23] Pol Schumacher, Mirjam Minor, Kirstin Walter, and Ralph Bergmann. 2012. Extraction of Procedural Knowledge from the Web: A Comparison of Two Workflow Extraction Approaches. In *Proceedings of the 21st International Conference on World Wide Web (WWW '12 Companion)*. ACM, New York, NY, USA, 739–747. <https://doi.org/10.1145/2187980.2188194>
- [24] Robert Speer and Catherine Havasi. 2013. ConceptNet 5: A large semantic network for relational knowledge. In *The People’s Web Meets NLP*. Springer, 161–176.
- [25] Sainbayar Sukhbaatar, Jason Weston, Rob Fergus, et al. 2015. End-to-end memory networks. In *Advances in neural information processing systems*. 2440–2448.
- [26] Jason Weston, Sumit Chopra, and Antoine Bordes. 2014. Memory networks. *arXiv preprint arXiv:1410.3916* (2014).
- [27] Kun Xu, Yansong Feng, Songfang Huang, and Dongyan Zhao. 2015. Semantic relation classification via convolutional neural networks with simple negative sampling. *arXiv preprint arXiv:1506.07650* (2015).
- [28] Yan Xu, Lili Mou, Ge Li, Yunchuan Chen, Hao Peng, and Zhi Jin. 2015. Classifying Relations via Long Short Term Memory Networks along Shortest Dependency Paths.. In *EMNLP*. 1785–1794.
- [29] Zi Yang and Eric Nyberg. 2015. Leveraging Procedural Knowledge for Task-oriented Search. In *Proceedings of the 38th International ACM SIGIR Conference on Research and Development in Information Retrieval (SIGIR '15)*. ACM, New York, NY, USA, 513–522. <https://doi.org/10.1145/2766462.2767744>
- [30] Zichao Yang, Diyi Yang, Chris Dyer, Xiaodong He, Alexander J Smola, and Edward H Hovy. 2016. Hierarchical Attention Networks for Document Classification. In *HLT-NAACL*. 1480–1489.
- [31] Dmitry Zelenko, Chinatsu Aone, and Anthony Richardella. 2003. Kernel Methods for Relation Extraction. *J. Mach. Learn. Res.* 3 (March 2003), 1083–1106. <http://dl.acm.org/citation.cfm?id=944919.944964>
- [32] Daojian Zeng, Kang Liu, Siwei Lai, Guangyou Zhou, Jun Zhao, et al. 2014. Relation Classification via Convolutional Deep Neural Network.. In *COLING*. 2335–2344.
- [33] Shu Zhang, Dequan Zheng, Xinchun Hu, and Ming Yang. 2015. Bidirectional Long Short-Term Memory Networks for Relation Classification.. In *PACLIC*.
- [34] Suncong Zheng, Feng Wang, Hongyun Bao, Yuexing Hao, Peng Zhou, and Bo Xu. 2017. Joint Extraction of Entities and Relations Based on a Novel Tagging Scheme. In *Proceedings of the 55th Annual Meeting of the Association for Computational Linguistics (Volume 1: Long Papers)*, Vol. 1. 1227–1236.