References

[1] Carlo Strapparava and Rada Mihalcea. Semeval-2007 task 14: Affective text. In *Proceedings of the Fourth International Workshop on Semantic Evaluations (SemEval-2007)*, pages 70–74, 2007.

[2] Ali Yadollahi, Ameneh Gholipour Shahraki, and Osmar R Zaiane. Current state of text sentiment analysis from opinion to emotion mining. *ACM Computing Surveys (CSUR)*, 50(2):25, 2017.

[3] Yasas Senarath and Uthayasanker Thayasivam. Datasearch at iest 2018: Multiple word embedding based models for implicit emotion classification of tweets with deep learning. In *Proceedings of the 9th Workshop on Computational Approaches to Subjectivity, Sentiment and Social Media Analysis*, pages 211–216, 2018.

[4] Bing Liu and Lei Zhang. A survey of opinion mining and sentiment analysis. In *Mining text data*, pages 415–463. Springer, 2012.

[5] Bo Pang, Lillian Lee, and Shivakumar Vaithyanathan. Thumbs up?: sentiment classification using machine learning techniques. In *Proceedings of the ACL-02 conference on Empirical methods in natural language processing-Volume 10*, pages 79–86. Association for Computational Linguistics, 2002.

[6] Sara Rosenthal, Preslav Nakov, Svetlana Kiritchenko, Saif Mohammad, Alan Ritter, and Veselin Stoyanov. Semeval-2015 task 10: Sentiment analysis in twitter. In *Proceedings of the 9th international workshop on semantic evaluation (SemEval 2015)*, pages 451–463, 2015.

[7] Svetlana Kiritchenko, Saif Mohammad, and Mohammad Salameh. Semeval-2016 task 7: Determining sentiment intensity of english and arabic phrases. In *Proceedings of the 10th international workshop on semantic evaluation (SEMEVAL-2016)*, pages 42–51, 2016.

[8] Hugo Liu, Henry Lieberman, and Ted Selker. A model of textual affect sensing using real-world knowledge. In *Proceedings of the 8th international conference on Intelligent user interfaces*, pages 125–132. ACM, 2003.

[9] Duyu Tang, Furu Wei, Nan Yang, Ming Zhou, Ting Liu, and Bing Qin. Learning sentiment-specific word embedding for twitter sentiment classification. In *Proceedings of the 52nd Annual Meeting of the Association for Computational Linguistics (Volume 1: Long Papers)*, pages 1555–1565, 2014.

[10] Li Dong, Furu Wei, Chuanqi Tan, Duyu Tang, Ming Zhou, and Ke Xu. Adaptive recursive neural network for target-dependent twitter sentiment classification. In *Proceedings of the 52nd annual meeting of the association for computational linguistics (volume 2: Short papers)*, pages 49–54, 2014.

[11] Alec Radford, Rafal Jozefowicz, and Ilya Sutskever. Learning to generate reviews and discovering sentiment. *arXiv preprint arXiv:1704.01444*, 2017.

[12] Paul Ekman. An argument for basic emotions. *Cognition & emotion*, 6(3-4):169–200, 1992.

[13] Robert Plutchik. The nature of emotions: Human emotions have deep evolutionary roots, a fact that may explain their complexity and provide tools for clinical practice. *American scientist*, 89(4):344–350, 2001.

[14] Cecilia Ovesdotter Alm, Dan Roth, and Richard Sproat. Emotions from text: machine learning for text-based emotion prediction. In *Proceedings of the conference on human language technology and empirical methods in natural language processing*, pages 579–586. Association for Computational Linguistics, 2005.

[15] Maite Taboada, Julian Brooke, Milan Tofiloski, Kimberly Voll, and Manfred Stede. Lexicon-based methods for sentiment analysis. *Computational linguistics*, 37(2):267–307, 2011.

[16] Saif Mohammad, Felipe Bravo-Marquez, Mohammad Salameh, and Svetlana Kiritchenko. Semeval-2018 task 1: Affect in tweets. In *Proceedings of The 12th International Workshop on Semantic Evaluation*, pages 1–17, 2018.

[17] Christos Baziotis, Athanasiou Nikolaos, Alexandra Chronopoulou, Athanasia Kolovou, Georgios Paraskevopoulos, Nikolaos Ellinas, Shrikanth Narayanan, and Alexandros Potamianos. Ntua-slp at semeval-2018 task 1: Predicting affective content in tweets with deep attentive rnns and transfer learning. In *Proceedings of The 12th International Workshop on Semantic Evaluation*, pages 245–255, 2018.

[18] Sara Rosenthal, Noura Farra, and Preslav Nakov. Semeval-2017 task 4: Sentiment analysis in twitter. In *Proceedings of the 11th international workshop on semantic evaluation (SemEval-2017)*, pages 502–518, 2017.

[19] Hardik Meisheri and Lipika Dey. Tcs research at semeval-2018 task 1: Learning robust representations using multi-attention architecture. In *Proceedings of The 12th International Workshop on Semantic Evaluation*, pages 291–299, 2018.

[20] Ji Ho Park, Peng Xu, and Pascale Fung. Plusemo2vec at semeval-2018 task 1: Exploiting emotion knowledge from emoji and# hashtags. *arXiv preprint arXiv:1804.08280*, 2018.

[21] Bjarke Felbo, Alan Mislove, Anders Søgaard, Iyad Rahwan, and Sune Lehmann. Using millions of emoji occurrences to learn any-domain representations for detecting sentiment, emotion and sarcasm. In *2017 Conference on Empirical Methods in Natural Language ProcessingConference on Empirical Methods in Natural Language Processing*. Association for Computational Linguistics, 2017.

[22] Ben Eisner, Tim Rocktäschel, Isabelle Augenstein, Matko Bošnjak, and Sebastian Riedel. emoji2vec: Learning emoji representations from their de-

scription. In *Conference on Empirical Methods in Natural Language Processing*, page 48, 2016.

[23] Tomas Mikolov, Kai Chen, Greg Corrado, and Jeffrey Dean. Efficient estimation of word representations in vector space. *arXiv preprint arXiv:1301.3781*, 2013.

[24] Roman Klinger, Orphee De Clercq, Saif Mohammad, and Alexandra Balahur. Iest: Wassa-2018 implicit emotions shared task. In *Proceedings of the 9th Workshop on Computational Approaches to Subjectivity, Sentiment and Social Media Analysis*, pages 31–42, 2018.

[25] Phil Katz, Matthew Singleton, and Richard Wicentowski. Swat-mp: the semeval-2007 systems for task 5 and task 14. In *Proceedings of the 4th international workshop on semantic evaluations*, pages 308–313. Association for Computational Linguistics, 2007.

[26] François-Régis Chaumartin. Upar7: A knowledge-based system for headline sentiment tagging. In *Proceedings of the 4th International Workshop on Semantic Evaluations*, pages 422–425. Association for Computational Linguistics, 2007.

[27] Alena Neviarouskaya, Helmut Prendinger, and Mitsuru Ishizuka. Compositionality principle in recognition of fine-grained emotions from text. In *Third International AAAI Conference on Weblogs and Social Media*, 2009.

[28] Saif M Mohammad and Felipe Bravo-Marquez. Wassa-2017 shared task on emotion intensity. *arXiv preprint arXiv:1708.03700*, 2017.

[29] Jordan J Louviere and George G Woodworth. Best-worst scaling: A model for the largest difference judgments. *University of Alberta: Working Paper*, 1991.

[30] Pranav Goel, Devang Kulshreshtha, Prayas Jain, and Kaushal Kumar Shukla. Prayas at emoint 2017: an ensemble of deep neural architectures for

emotion intensity prediction in tweets. In *Proceedings of the 8th Workshop on Computational Approaches to Subjectivity, Sentiment and Social Media Analysis*, pages 58–65, 2017.

[31] Maximilian Köper, Evgeny Kim, and Roman Klinger. Ims at emoint-2017: emotion intensity prediction with affective norms, automatically extended resources and deep learning. In *Proceedings of the 8th Workshop on Computational Approaches to Subjectivity, Sentiment and Social Media Analysis*, pages 50–57, 2017.

[32] Venkatesh Duppada and Sushant Hiray. Seernet at emoint-2017: Tweet emotion intensity estimator. *arXiv preprint arXiv:1708.06185*, 2017.

[33] Vineet John and Olga Vechtomova. Uwat-emote at emoint-2017: emotion intensity detection using affect clues, sentiment polarity and word embeddings. In *Proceedings of the 8th Workshop on Computational Approaches to Subjectivity, Sentiment and Social Media Analysis*, pages 249–254, 2017.

[34] Md S Akhtar, Palaash Sawant, Asif Ekbal, JD Pawar, and Pushpak Bhattacharyya. Iitp at emoint-2017: Measuring intensity of emotions using sentence embeddings and optimized features. Association for Computational Linguistics, 2017.

[35] Sepp Hochreiter and Jürgen Schmidhuber. Long short-term memory. *Neural computation*, 9(8):1735–1780, 1997.

[36] Sinno Jialin Pan and Qiang Yang. A survey on transfer learning. *IEEE Transactions on knowledge and data engineering*, 22(10):1345–1359, 2010.

[37] Sinno Jialin Pan and Qiang Yang. A survey on transfer learning. *IEEE Transactions on knowledge and data engineering*, 22(10):1345–1359, 2009.

[38] Jacob Devlin, Ming-Wei Chang, Kenton Lee, and Kristina Toutanova. Bert: Pre-training of deep bidirectional transformers for language understanding. *arXiv preprint arXiv:1810.04805*, 2018.

[39] Jeffrey Pennington, Richard Socher, and Christopher Manning. Glove: Global vectors for word representation. In *Proceedings of the 2014 conference on empirical methods in natural language processing (EMNLP)*, pages 1532–1543, 2014.

[40] Armand Joulin, Edouard Grave, Piotr Bojanowski, and Tomas Mikolov. Bag of tricks for efficient text classification. In *Proceedings of the 15th Conference of the European Chapter of the Association for Computational Linguistics: Volume 2, Short Papers*, pages 427–431. Association for Computational Linguistics, April 2017.

[41] Yoon Kim. Convolutional neural networks for sentence classification. *arXiv preprint arXiv:1408.5882*, 2014.

[42] Fréderic Godin, Baptist Vandersmissen, Wesley De Neve, and Rik Van de Walle. Multimedia lab @ acl wnut ner shared task: Named entity recognition for twitter microposts using distributed word representations. In *Proceedings of the Workshop on Noisy User-generated Text*, pages 146–153, 2015.

[43] Armand Joulin, Edouard Grave, Piotr Bojanowski, and Tomas Mikolov. Bag of tricks for efficient text classification. *arXiv preprint arXiv:1607.01759*, 2016.

[44] Tomas Mikolov, Edouard Grave, Piotr Bojanowski, Christian Puhrsch, and Armand Joulin. Advances in pre-training distributed word representations. In *Proceedings of the International Conference on Language Resources and Evaluation (LREC 2018)*, 2018.

[45] Oren Melamud, Jacob Goldberger, and Ido Dagan. context2vec: Learning generic context embedding with bidirectional lstm. In *Proceedings of The 20th SIGNLL Conference on Computational Natural Language Learning*, pages 51–61, 2016.

[46] Saif Mohammad and Felipe Bravo-Marquez. Emotion intensities in tweets. In *Proceedings of the 6th Joint Conference on Lexical and Computational*

Semantics, *SEM @ACM 2017, Vancouver, Canada, August 3-4, 2017, pages 65–77, 2017.

[47] Tianqi Chen and Carlos Guestrin. Xgboost: A scalable tree boosting system. In *Proceedings of the 22nd acm sigkdd international conference on knowledge discovery and data mining*, pages 785–794. ACM, 2016.

[48] James S Bergstra, Rémi Bardenet, Yoshua Bengio, and Balázs Kégl. Algorithms for hyper-parameter optimization. In *Advances in neural information processing systems*, pages 2546–2554, 2011.

[49] Diederik P Kingma and Jimmy Ba. Adam: A method for stochastic optimization. *arXiv preprint arXiv:1412.6980*, 2014.

[50] Alon Rozental, Daniel Fleischer, and Zohar Kelrich. Amobee at iest 2018: Transfer learning from language models. In *Proceedings of the 9th Workshop on Computational Approaches to Subjectivity, Sentiment and Social Media Analysis*, pages 43–49, 2018.

[51] Venkatesh Duppada, Royal Jain, and Sushant Hiray. Seernet at semeval-2018 task 1: Domain adaptation for affect in tweets. In *Proceedings of The 12th International Workshop on Semantic Evaluation*, pages 18–23, 2018.