Danushka BOLLEGALA

CONTRACT INFORMATION

NAME:	Dr. Danushka Bollegala (PhD)
POSITION:	Senior Lecturer / Associate Professor
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EDUCATION

2007 – 2009	PhD Computer Science, The University of Tokyo, Japan. *Summa Cum Laude*
2005 – 2007	M.Sc. Computer Science, The University of Tokyo, Japan. *Summa Cum Laude*
2001– 2005	B.Sc. Computer Science, The University of Tokyo, Japan. *Summa Cum Laude*

EMPLOYMENT HISTORY

Current AUGUST 2013	Senior Lecturer, UNIVERSITY OF LIVERPOOL, UK.
APRIL 2012 – AUGUST 2013	Senior Assistant Professor, (*koshi*) UNIVERSITY OF TOKYO, Japan.
APRIL 2010 – MARCH 2012	Assistant Professor, UNIVERSITY OF TOKYO, Japan.
OCTOBER 2009 – MARCH 2010	JSPS Post-doctoral Research Fellow, UNIVERSITY OF SUSSEX, UK.
APRIL 2007 – SEPTEMBER 2010	Japan Society for Promotion of Science (JSPS), Doctoral Research Fellow (DC1) UNIVERSITY OF TOKYO, Japan.
APRIL 2005 – MARCH 2007	Research Assistant, National Institute of Advanced Industrial Science and Technology (AIST), Japan.
JUNE 2005 – MARCH 2010	Research Consultant, FAST a Microsoft Subsidiary (former FAST Search & Transfer), Norway.

HONOURS AND AWARDS

1. EPSRC Top Peer Reviewer's Award 2017.

2. Best Journal Paper of the Year 2014-2015, Japanese Society for Artificial Intelligence.

3. IEEE Japan Chapter Young Author Award 2011.

4. Best paper award at 2011 Genetic and Evolutionary Computation (GECCO) Conference.

5. Best poster paper at 2010 Pacific Rim International Conference on Artificial Intelligence (PRICAI).

6. Annual Conference Award for the Best Paper at 2010 Japanese Society for Artificial Intelligence (JSAI).

7. Dean's Award for the Best Doctoral Thesis of the Year 2010.

8. Dean's Award for the Best Masters Thesis of the Year 2007.

9. Dean's Award for the Best Undergraduate Thesis of the Year 2005.

RESEARCH GRANTS

Total research income so far GBP 2,040,100.

1. Procedural Natural Language Inference (Cookpad), PI, (GBP 24k), 2017-2018.

2. Legal Advisor Dialogue Engine (LexSnap), PI, (GBP 12k), 2017-2018.

3. Algorithm Design for Automatic Classification of Transactions into a Taxonomy (Rosslyn Data Technologies), PI, (GBP 5k), 2017-2018.

4. **Track Analytics For Effective Triage Of Wide Area**, Defence Science Technology Laboratory (DSTL), Co-I (GBP 243k), 2017-2019.

5. **Digital Legal Assistant**, Knowledge Transfer Partnership (Innovate UK), PI (GBP 492k), 2017-2020.

6. **WEB-RADR**: Recognising Adverse Drug Reactions, (European Commission) Innovative Medicine Initiative, Co-PI (GBP 471k), 2014-2017.

7. **I knew that relation from news**, Innovation Voucher Scheme, University of Liverpool, PI (GBP 5k), 2015-2016.

8. **The Revierview Law Contract Map Project**, Knowledge Transfer Partnership (Innovate UK), Co-PI (GBP 269k), 2015-2018.

9. **Resolving Relational Ambiguity between Entities on the Web**, Microsoft Research (MSR) CORE-9 Research Grant, PI, (GBP 10K), 2013–2015.

10. **Domain Adaptation for Semantic Relation Extraction**, Japanese Society for the Promotion of Science (JSPS), Research Grant for Young Researchers (B). PI (GBP 20K), 2012–2015.

11. **Cross-Language Relational Search**, Microsoft Research (MSR) CORE-7 Research Grant, PI, (GBP 20K), 2011-2012.

12. **Developing a Cross-Language Web Search Engine**, Information Technology Promotion Agency of Japan (IPA) grant for explorative software development (Mito Project), PI, (GBP 26.5K), 2010-2011.

13. **A Latent Relational Search Engine**, Google Research Award, Co-PI, (GBP 18.6K), 2010–2011.

14. **Developing a Relational Search Engine to Retrieve Semantic Relations between Entities**, Japanese Society for the Promotion of Science (JSPS) research grant, PI. (GBP 29.8K), 2010-2012.

15. **Research grant for overseas visiting scholars**, Global Centre of Excellence (GCOE), Japan. PI. (GBP 9.7K), April 2011–June 2011.

16. **Extracting Attributes for Entities using Web Data**, Global Centre of Excellence (GCOE), Japan. Sole PI. (GBP 7.5K), 2010-2011.

17. **Learning to Rank Entities on the Web**, Microsoft Research (MSR) CORE-6 Research Grant, Co-PI, (GBP 19.4K), 2010-2011.

18. **Using Web Mining to Provide Useful Information to Drivers**, Toyota InfoTechnology Centre, Co-PI, (GBP 29.8K) 2009-2012.

19. **Disambiguating Personal Names on the Web**, Japan Society for the Promotion of Science (JSPS) Research Grant PI. (GBP 29.8K), 2007-2009.

20. **Using Network Theory and Machine Learning to Structure and Represent Information Available on the Web**, Co-PI, (GBP 298K), 2009–2012.

PUBLICATIONS

Dr. Bollegala has published over 100 papers in top international venues in Natural Language Processing, Machine Learning, Data Mining, Artificial Intelligence, and Social Media Analysis. His papers have been cited over 2500 times and Dr. Bollegala has an h-index of 26. For a full list of his publications see his Google Scholar Profile. He leads the Natural Language Processing and Machine Learning Research Groups in the Department of Computer Science, University of Liverpool.

REFERRED JOURNAL PAPERS

[1] Abdullah Alsheri, Frans Coenen, and Danushka Bollegala. Iterative time keystroke continuous authentication: A time series based approach. *KI - Künstliche Intelligenz*, X(X):X–X, 2018.

[2] Mohammed Alsuhaibani, Danushka Bollegala, Takanori Maehara, and Ken ichi Kawarabayashi. Jointly learning word embeddings using a corpus and a knowledge base. *Plos One*, X(X):X–X, 2018.

[3] Danushka Bollegala, Richard Slone, Simon Maskell, Joanne Hajne, and Munir Pirmohammed. Learning causality patterns for detecting adverse drug reactions from social media. *Journal of Medical Internet Research Public Health Surveillance*, pages X–X, 2018.

[4] Xia Cui, Noor Al-Bazzaz, Danushka Bollegala, and Frans Coenen. A comparative study of pivot selection strategies for unsupervised cross-domain sentiment classification. *The Knowledge Engineering Review*, X(X):X–X, 2018.

[5] Danushka Bollegala, Kohei Hayashi, and Ken ichi Kawarabayashi. Learning linear transformations between counting-based and prediction-based word embeddings. *PLoS ONE*, 12(9):1–21, September 2017.

[6] Huda Hakami and Danushka Bollegala. Compositional approaches for representing relations between words: A comparative study. *Knowledge-Based Systems*, 136C:172–182, September 2017.

[7] Tomoyuki Kajiwara, Danushka Bollegala, Yuichi Yoshida, and Ken ichi Kawarabayashi. An iterative approach for the global estimation of sentence similarity. *PLoS ONE*, July 2017.

[8] Danushka Bollegala. Dynamic feature scaling for online learning of binary classifiers. *Knowledge-Based Systems*, May 2017.

[9] Hakami Huda and Danushka Bollegala. A classification approach for detecting cross-lingual biomedical term translations. *Natural Language Engineering*, 1(1469-8110):1–21, April 2015.

[10] Danushka Bollegala, Georgios Kontonatsios, and Sophia Ananiadou. A cross-lingual similarity measure for detecting biomedical term translations. *PLOS ONE*, 10(6):1–28, 06 2015.

[11] Danushka Bollegala, Tingting Mu, and Yannis Goulermas. Cross-domain sentiment classification using sentiment sensitive embeddings. *IEEE Transactions on Knowledge and Data Engineering (TKDE)*, 28(2):398–410, 2015.

[12] Nozomi Nori, Danushka Bollegala, and Mitsuru Ishizuka. Interest prediction via user's actions on social media. *Transactions of the Japanese Society for Artificial Intelligence*, pages 168–176, 2015.

[13] Nozomi Nori, Danushka Bollegala, and Hisashi Kashima. Simultaneous higher-order relation prediction via collective indicence matrix embedding. *Transactions of the Japanese Society for Artificial Intelligence*, pages 459–465, 2015.

[14] Hiroyuki Sato, Yoshihiko Hasegawa, Danushka Bollegala, and Hitoshi Iba. Improved sampling using loopy belief propagation for probabilistic model building genetic programming. *Swarm and Evolutionary Computation*, pages 1–8, 2015.

[15] Richard Sloane, Orod Osanlou, David Lewis, Danushka Bollegala, Simon Maskell, and Munir Pirmohamed. Social media and pharmacovigilance: A review of the opportunities and challenges. *British Journal of Clinical Pharmacology*, 80(4):910 – 920, 2015.

[16] Nozomi Nori, Danushka Bollegala, and Hisashi Kashima. A dimension reduction approach to multinomial relation prediction. *Transactions of the Japanese Society for Artificial Intelligence*, pages 168–176, 2014.

[17] Danushka Bollegala, David Weir, and John Carroll. Cross-domain sentiment classification using a sentiment sensitive thesaurus. *IEEE Transactions on Knowledge and Data Engineering*, 25(8):1719 – 1731, August 2013.

[18] Danushka Bollegala, Yutaka Matsuo, and Mitsuru Ishizuka. Minimally supervised novel relation extraction using latent relational mapping. *IEEE Transactions on Knowledge and Data Engineering*, 25(2):419 – 432, February 2013.

[19] Danushka Bollegala, Tomokazu Goto, Nguyen Tuan Duc, and Mitsuru Ishizuka. Improving relational similarity measurement using symmetries in proportional word analogies. *Information Processing and Management*, 49(1):355 – 369, January 2013.

[20] Danushka Bollegala. Deep learning for natural language processing. *Journal of the Japanese Society for Artificial Intelligence*, pages 195–203, 2013.

[21] Danushka Bollegala and Ekaterina Shutova. Metaphor interpretation using paraphrases extracted from the web. *PLoS ONE*, 8(9):1–10, 2013.

[22] Ken ichi Yokote, Danushka Bollegala, and Mitsuru Ishizuka. Jointly learning similarity transformations for textual entailment. *Transactions of of the Japanese Society for Artificial Intelligence*, pages 220–229, 2013.

[23] Muhammad Asif Hossain Khan, Danushka Bollegala, Guangwen Li, and Kaoru Sezaki. Delineating real-time events by identifying relevant tweets with popular discussion points. *ASE Human Journal*, 2(3):136 – 150, 2013.

[24] Nguyen Tuan Duc, Danushka Bollegala, and Mitsuru Ishizuka. Cross-language latent relational search between japanese and english languages using a web corpus. *ACM Transactions on Asian Language Processing (TALIP)*, 11(3):1 – 33, September 2012.

[25] Danushka Bollegala, Yutaka Matsuo, and Mitsuru Ishizuka. Automatic annotation of ambiguous personal names on the web. *Computational Intelligence*, 28(3):398 – 425, August 2012.

[26] Danushka Bollegala, Yutaka Matsuo, and Mitsuru Ishizuka. Measuring the degree of synonymy between words using relational similarity between word pairs as a proxy. *Institute of Electronics, Information and Communication Engineers (IEICE) Transactions on Information Systems*, pages 2116–2123, 2012.

[27] Danushka Bollegala, Naoaki Okazaki, and Mitsuru Ishizuka. A preference learning approach to sentence ordering for multi-document summarization. *Information Sciences*, 217:78 – 95, 2012.

[28] Danushka Bollegala, Naoki Tani, and Mitsuru Ishizuka. Improving the accuracy of attribute extraction using the relatedness between attribute values. *Transactions of the Japanese Society for Artificial Intelligence*, pages 245–252, 2012.

[29] Danushka Bollegala, Yutaka Matsuo, and Mitsuru Ishizuka. A supervised classification approach for measuring similarity between word pairs. *Transactions of the Institute of Electronics, Information and Communication Engineers (IEICE)*, E94-D(11):2227–2233, November 2011.

[30] Danushka Bollegala, Yutaka Matsuo, and Mitsuru Ishizuka. Automatic discovery of personal name aliases from the web. *IEEE Transactions on Knowledge and Data Engineering*, 23(6):831 – 844, July 2011.

[31] Danushka Bollegala, Yutaka Matsuo, and Mitsuru Ishizuka. A web search engine-based approach to measure semantic similarity between words. *IEEE Transactions on Knowledge and Data Engineering (TKDE)*, 23(7):977–990, July 2011.

[32] Nguyen Tuan Duc, Danushka Bollegala, and Mitsuru Ishizuka. Exploiting relational similarity between entity pairs for latent relational search. *Transactions of the Information Processing Society of Japan*, 52(4):1790–1802, 2011.

[33] Nguyen Tuan Duc, Danushka Bollegala, and Mitsuru Ishizuka. Relation representation and indexing method for fast and high precision latent relatioal search engine. *Special issue of the Transactions of the Japanese Society for Artificial Intelligence*, 26(2):307–312, 2011.

[34] Tomokazu Goto, Nguyen Tuan Duc, Danushka Bollegala, and Mitsuru Ishizuka. Improving relational search performance using relational symmetries and predictors. *Transactions of of the Japanese Society for Artificial Intelligence*, 26(6):649–656, 2011.

[35] Wataru Sunayama, Yasufumi Takama, Danushka Bollegala, Yoko Nishihara, Hidekazu Tokunaga, Mineo Kushima, and Mitsunori Matsushita. Total environment for text data mining. *Transactions of of the Japanese Society for Artificial Intelligence*, 26(4):483–493, 2011.

[36] Danushka Bollegala, Naoaki Okazaki, and Mitsuru Ishizuka. A bottom-up approach to sentence ordering for multi-document summarization. *Information Processing and Management*, 46(1):89 – 109, January 2010.

[37] Keigo Watanabe, Danushka Bollegala, Yutaka Matsuo, and Mitsuru Ishizuka. Automatic extraction of related terms using web search engines. *Journal of the Japan Society for Fuzzy Theory and Intelligent Informatics*, 23(4):483–493, 2010.

[38] D. BOLLEGALA, N. OKAZAKI, and M. ISHIZUKA. Agglomerative clustering based approach to sentence ordering for multi-document summarization. *IEIC Technical Report (Institute of Electronics, Information and Communication Engineers)*, 105(594):13–18, 2006.

Referred Conference Papers

[39] Mohammed Alsuhaibani and Danushka Bollegala. Joint learning of sense and word embeddings. In *Proc. of LREC*, 2018.

[40] Danushka Bollegala, Yuichi Yoshida, and Ken ichi Kawarabayashi. Using k-way Co-occurrences for Learning Word Embeddings. In *Proc. of AAAI*, 2018.

[41] Joshua Coates and Danushka Bollegala. Frustratingly easy meta-embedding – computing meta-embeddings by averaging source word embeddings. In *16th Annual Conference of the North American Chapter of the Association for Computational Linguistics: Human Language Technologies*, pages X–X, 2018.

[42] Angrosh Mandya, Danushka Bollegala, Frans Coenen, and Katie Atkinson. A dataset for inter-sentence relation extraction using distant supervision. 2018.

[43] Pavithra Rajendran, Danushka Bollegala, and Simon Parsons. Is something better than nothing? automatically predicting stance-based arguments using deep learning and small labelled dataset. In *16th Annual Conference of the North American Chapter of the Association for Computational Linguistics: Human Language Technologies*, pages X–X, 2018.

[44] Pavithra Rajendran, Danushka Bollegala, and Simon Parsons. Sentiment-stance-specificity (sss) dataset: Identifying support-based entailment among opinions. 2018.

[45] Abdullah Alsheri, Frans Coenen, , and Danushka Bollegala. Accurate continuous and non-intrusive user authentication with multivariate keystroke streaming. In *Proc. of the 9th International Conference on Knowledge Discovery, Knowledge Engineering and Knowledge Management (IC3K)*, pages xxx–xxx, 2017.

[46] Abdullah Alsheri, Frans Coenen, , and Danushka Bollegala. Spectral analysis of keystroke streams: Towards effective real-time and continuous user authentication. In *Proc. of Workshop on Spatial and Spatio-temporal Data Mining (SSTDM) at the IEEE International Conference on Data Mining (SSTDM)*, 2017.

[47] Abdullah Alsheri, Frans Coenen, , and Danushka Bollegala. Spectral analysis of keystroke streams: Towards effective real-time continuous user authentication. In *4th International Conference on Information Systems Security and Privacy (ICISSP)*, pages 62–73, 2017.

[48] Xia Cui, Frans Coenen, and Danushka Bollegala. Effect of data imbalance on unsupervised domain adaptation of part-of-speech tagging and pivot selection strategies. In *Proc. of the Wokshop on Learning With Imbalanced Domains: Theory and Applications (LIDTA) at the European Conference on Machine Learning and Principles and Practice of Knowledge Discovery in Databases (ECML-PKDD)*, 2017.

[49] Xia Cui, Frans Coenen, and Danushka Bollegala. Tsp: Learning task-specific pivots for unsupervised domain adaptation. In *Proc. of the European Conference on Machine Learning and Principles and Practice of Knowledge Discovery in Databases (ECML-PKDD)*, 2017.

[50] Matias Garcia-Constantino, Katie Atkinson, Danushka Bollegala, Karl Chapman, Frans Coenen, Clare Roberts, and Katy Robson. Cliel: Context-based information extraction from commercial law documents. In *Proc. of the 16th International Conference on Artificial Intelligence and Law (ICAIL)*, pages xxx–xxx, 2017.

[51] Huda Hakami and Danushka Bollegala. Discovering representative space for relational similarity measurement. In *Proc. of the 15th International Conference of the Pacific Association for Computational Linguistics (PACLING)*, pages xxx–xxx, 2017.

[52] Angrosh Mandya, Danushka Bollegala, Frans Coenen, and Katie Atkinson. Classifier-based pattern selection approach for relation instance extraction. In *Proc. of the International Conference on Computational Linguistics and Intelligent Text Processing (CICLing)*, pages xxx–xxx. LNCS, Springer, 2017.

[53] Angrosh Mandya, Danushka Bollegala, Frans Coenen, and Katie Atkinson. Frame-based semantic patterns for relation extraction. In *Proc. of the 15th International Conference of the Pacific Association for Computational Linguistics (PACLING)*, pages xxx–xxx, 2017.

[54] Pavithra Rajendran, Danushka Bollegala, and Simon Parsons. Identifying argument based relation properties in opinions. In *Proc. of the 15th International Conference of the Pacific Association for Computational Linguistics (PACLING)*, pages xxx–xxx, 2017.

[55] Abdullah Alsheri, Frans Coenen, , and Danushka Bollegala. Keyboard usage authentication using time series analysis. In *Proc. of 18th International Conference on Big Data Analytics and Knowledge Discovery (DaWak 2016)*, pages 239–252, 2016.

[56] Abdullah Alsheri, Frans Coenen, , and Danushka Bollegala. Towards keystroke continuous authentication using time series analytics. In *Proc. of the 36th SGAI International Conference on Artificial Intelligence (SGAI), Research and Development in Intelligent Systems XXXIIII*, pages 325–339. Springer, 2016.

[57] Danushka Bollegala, Alsuhaibani Mohammed, Takanori Maehara, and Ken ichi Kawarabayashi. Joint word representation learning using a corpus and a semantic lexicon. In *Proc. of AAAI*, pages 2690–2696, 2016.

[58] Pavithra Rajendran, Danushka Bollegala, and Simon Parsons. Assessing weight of opinion by aggregating coalitions of arguments. In *Proc. of 6th International Conference on Computational Models of Argument (COMMA)*, pages 431–438, 2016.

[59] Pavithra Rajendran, Danushka Bollegala, and Simon Parsons. Contextual stance classification of opinions: A step towards enthymeme reconstruction in online reviews. In *Proc. of the 3rd Workshop on Argument Mining*, pages 31–39, 2016.

[60] Danushka Bollegala, Takanori Maehara, and Ken ichi Kawarabayashi. Embedding semantic relationas into word representations. In *Proc. of IJCAI*, pages 1222 – 1228, 2015.

[61] Danushka Bollegala, Takanori Maehara, and Ken ichi Kawarabayashi. Unsupervised cross-domain word representation learning. In *Proc. of ACL*, pages 730 – 740, 2015.

[62] Danushka Bollegala, Takanori Maehara, Yuichi Yoshida, and Ken ichi Kawarabayashi. Learning word representations from relational graphs. In *Proc. of 29th AAAI Conference on Aritificial Intelligence*, pages 2146 – 2152, 2015.

[63] Pascal Kuyten, Danushka Bollegala, Bernd Hollerit, Helmut Prendinger, and Kiyoharu Aizawa. A discourse search engine based on rhetorical structure theory. In *Proc. of 37th European Conference on Information Retrieval (ECIR 2015)*, pages 80–91, 2015.

[64] Danushka Bollegala, David Weir, and John Carroll. Learning to predict distributions of words across domains. In *Proc. of Association for Computational Linguistics (ACL)*, pages 613 – 623, 2014.

[65] Danushka Bollegala, Mitsuru Kusumoto, Yuichi Yoshida, and Ken ichi Kawarabayashi. Mining for analogous tuples from an entity-relation graph. In *Proc. of International Joint Conferences on Artificial Intelligence*, pages 2064 – 2070, 2013.

[66] Muhammad Asif Hossain Khan, Danushka Bollegala, Guangwen Li, and Kaoru Sezaki. Multi-tweet summarization of real-time events. In *IEEE International Conference on Social Computing (SocialComp)*, pages 128 – 133, 2013.

[67] Hiroyuki Sato, Danushka Bollegala, Yoshihiko Hasegawa, and Hitoshi Iba. Learning non-linear ranking functions for web search using probabilistic model building gp. In *Proc. of IEEE Congress on Evolutionary Computation (CEC 2013)*, pages 3371 – 3378, 2013.

[68] Ken ichi Yokote, Danushka Bollegala, and Mitsuru Ishizuka. Similarity is not entailment – jointly learning similarity transformations for textual entailment. In *Proc. of the National Conference on Artificial Intelligence (AAAI)*, pages 1720 – 1726, 2012.

[69] Nozomi Nori, Danushka Bollegala, and Hisashi Kashima. Multinomial relation prediction in social data: A dimension reduction approach. In *AAAI'12*, pages 115 – 121, 2012.

[70] Hiroyuki Sato, Yoshihiko Hasegawa, Danushka Bollegala, and Hitoshi Iba. Probabilistic model building gp with belief propagation. In *Proc. of the IEEE Congress on Evolutionary Computation (CEC 2012)*, pages 1–8, 2012.

[71] Francisco Tacoa, Danushka Bollegala, and Mitsuru Ishizuka. A context expansion method for supervised word sense disambiguation. In *Proc. of 6th IEEE International Conference on Semantic Computing (ICSC 2012)*, pages 339–341, 2012.

[72] Danushka Bollegala. A supervised ranking approach for detecting relationally similar word pairs. In *Proc. of the IEEE International Conference on Information and Automation for Sustainability (ICAfs)*, pages 323 – 328, 2011.

[73] Danushka Bollegala, Yutaka Matsuo, and Mitsuru Ishizuka. From actors, politicians, to ceos: Domain adaptation of relational extractors using a latent relational mapping. In *Proc. of the 20th International World Wide Web Conference (WWW)*, pages 13 – 14, 2011.

[74] Danushka Bollegala, Yutaka Matsuo, and Mitsuru Ishizuka. Relation adaptation: Learning to extract novel relations with minimum supervision. In *Proc. of International Joint Conferences in Artificial Intelligence (IJCAI)*, pages 2205 – 2210, 2011.

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[76] Danushka Bollegala, David Weir, and John Carroll. Using multiple sources to construct a sentiment sensitive thesaurus for cross-domain sentiment classification. In *Proc. of Association for Computational Linguistics (ACL)*, pages 132 – 141, 2011.

[77] Nguyen Tuan Duc, Danushka Bollegala, and Mitsuru Ishizuka. Cross-language latent relational search: Mapping knowledge across languages. In *Proc. of the Twenty-Fifth AAAI Conference on Artificial Intelligence*, pages 1237 – 1242, 2011.

[78] Hugo Hernault, Danushka Bollegala, and Mitsuru Ishizuka. Semi-supervised discourse relation classification with structural learning. In *Proc. of CICLing*, pages 340 – 352, 2011.

[79] Haibo Li, Danushka Bollegala, Yutaka Matsuo, and Mitsuru Ishizuka. Using graph based method to improve bootstrapping relation extraction. In *Proc. of the Conference on Intelligent Text Processing and Computational Linguistics (CICLing)*, pages 127 – 138, 2011.

[80] Nasimul Noman, Danushka Bollegala, and Hitoshi Iba. An adaptive differential evolution algorithm. In *Proc. of the IEEE Congress on Evolutionary Computation (IEEE CEC)*, pages 2229 – 2236, 2011.

[81] Nasimul Noman, Danushka Bollegala, and Hitoshi Iba. Differential evolution with self adaptive local search. In *Proc. of the Genetic and Evolutionary Computation Conference (GECCO)*, pages 1099 – 1106, 2011.

[82] Nozomi Nori, Danushka Bollegala, and Mitsuru Ishizuka. Exploiting user interest on social media for aggregating diverse data and predicting interest. In *5th International AAAI Conference on Weblogs and Social Media (ICWSM)*, pages 241 – 248, 2011.

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[84] Naoki Tani, Danushka Bollegala, Naiwala Chandrasiri, Keisuke Okamoto, Kazunari Nawa, Shuhei Iitsuka, and Yutaka Matsuo. Collaborative exploratory search in real-world context. In *20th ACM International Conference on Information and Knowledge Management*, pages 2137 – 2140, 2011.

[85] Danushka Bollegala, Yutaka Matsuo, and Mitsuru Ishizuka. Relational duality: Unsupervised extraction of semantic relations between entities on the web. In *Proc. of International World Wide Web Conference (WWW)*, pages 151 – 160, 2010.

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[87] Tomokazu Goto, Nguyen Duc, Danushka Bollegala, and Mitsuru Ishizuka. Exploiting symmetry in relational similarity for ranking relational search results. In *Proc. of the 11th Pacific Rim International Conference on Artificial Intelligence (PRICAI 2010)*, pages 595 – 600, 2010.

[88] Hugo Hernault, Danushka Bollegala, and Mitsuru Ishizuka. A semi-supervised approach to improve classification of infrequent discourse relations using feature vector extension. In *Empirical Methods in Natural Language Processing*, pages 399 – 409, 2010.

[89] Hugo Hernault, Danushka Bollegala, and Mitsuru Ishizuka. A sequential model for discourse segmentation. In *International Conference on Intelligence Text Processing and Computational Linguistics (CICLing)*, pages 315 – 326, 2010.

[90] Hugo Hernault, Danushka Bollegala, and Mitsuru Ishizuka. Towards semi-supervised classification of discourse relations using feature correlations. In *Proc. of the 11th Annual SIGdial Meeting on Discourse and Dialogue (SIGDIAL 2010)*, pages 55 – 58, 2010.

[91] Danushka Bollegala, Yutaka Matsuo, and Mitsuru Ishizuka. Measuring the similarity between implicit semantic relations from the web. In *Proc. of International World Wide Web Conference (WWW)*, pages 651 – 660, 2009.

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