## Edward John Briscoe

Professor of Natural Language Processing, MBZUAI
Fellow, Girton College, Cambridge

### Academic Qualifications

English/Philosophy/Linguistics, B.A. (Hons.), University of Lancaster, UK,
    1980
Linguistics, M.Phil., University of Cambridge, UK, 1981
Linguistics, Ph.D., University of Cambridge, UK, 1984

### Academic Posts Held

Professor of Natural Language Processing, Department of NLP, Mohamed bin
    Zayed University of Artificial Intelligence (2023-now)
Professor of Computational Linguistics, Computer Laboratory, University of
    Cambridge, UK (2004–2023)
Reader in Computational Linguistics, Computer Laboratory, University of
    Cambridge, UK (2000–2004)
University Lecturer, Computer Laboratory, University of Cambridge, UK
    (1988– 2000 (on unpaid leave 1990-1996)).
Visiting Researcher, Institute for Research in Cognitive Science, University of
    Pennsylvania, USA (1994–1996, as part of EPSRC Advanced Fellowship).
Research Scientist, Xerox European Research Centre, Grenoble Laboratory,
    France (1993–1994).
EPSRC Advanced Research Fellow, Computer Laboratory, University of
    Cambridge, UK (1990–1996).
Lecturer, Dept. of Linguistics, University of Lancaster, UK (1985–1988).
SERC Information Technology Research Fellow, Computer Laboratory,
    University of Cambridge, UK (1984–1985).

### Research Interests

Computational Linguistics
Natural Language Processing
Language Science

Specific areas of (recent) research:
automated assessment and tutoring of writing for language learners;
(nearly-)deterministic, statistical, and robust parsing techniques;
text classification, filtering and mining using linguistic features;
textual information extraction from scientific articles;
acquiring lexical information from on-line text and dictionaries;
exploiting punctuation and document structure during parsing;
models of human language learning and parsing;
evolutionary simulation of language development and change.

## Teaching & Associated Administration

**1990-2010, 2yr appts. every 6yrs** Admissions Tutor, M.Phil, Speech and Language Processing, Cambridge University

**1990-2010, 2yr appts. every 6yrs** Course Examiner, M.Phil, Speech and Language Processing, Cambridge University

**1990-93,97-2001** Natural Language Processing, 3rd Yr. CS Tripos, Cambridge University

**1992-3** Discourse Processing, M.Phil, Cambridge University

**1997** Language Systems, M.Phil, Cambridge University

**1997-2001** Syntactic and Semantic Analysis, M.Phil, Cambridge University

**2000-now** Introduction to Linguistics, M.Phil, Cambridge University

**2000-2022** Statistical Natural Language Processing, M.Phil, Cambridge University

**2010-2022** Machine Learning for Language Processing, M.Phil, Cambridge University

**1989-2023** PhD Supervision, Cambridge University; to date 23 students who I supervised have successfully obtained doctorates (no failures)

**1989-now** M.Phil/CS Tripos Project Supervision, Cambridge University, to date, I have supervised around 60 dissertations to successful completion

**1996-97,2004-06,08-11** Member, Dept. Degree Committee (which admits, administers and awards degrees to graduate students)

**1996-98,2004-06** Member, University Computer Syndicate (which oversees departmental and computing service matters)

**1996-98, 2008-2012** Member, Dept. Appointments Committee (which oversees appts. and promotions)

**1999-2012** Member/Chair Dept. Library Committee (which oversees library administration and policy)

**2000-2010** Codirector/Director, M.Phil in Computer Speech, Text and Internet Technology

**2003-2007** Member, General Board Committee on Libraries

**2005-2011** Member, Appointments Committee, Research Centre for English and Applied Linguistics

**2005-2008** Member, Management Committtee, Centre for Applied Research in Educational Technology

**2007-2009** Chair, Cambridge Institute for Language Research

**2008-2011** Member/Chair, Faculty Senior Promotions Committee

**2009-2020** Member, Management Committee for M.Phil in Advanced Computer Science

**2009-11,2018-19** Chief Examiner, M.Phil in Advanced Computer Science

**2010-11,2016-18** Admissions Officer, M.Phil in Advanced Computer Science

**2012-2015** Member, Girton College Council

**2023-now** Deputy Head of NLP Dept., MBZUAI


**Associated Professional Experience**

Principal/Co-Investigator (Externally-funded projects):

1. A Computational Grammar of English, Alvey/SERC, £150k, CI, 1985-88

2. Automatic Speech Recognition Using Advanced Pattern Matching Algorithms, Alvey/SERC, £200k, CI, 1985-88

3. Extended Development of the Alvey Natural Language Tools, DTI-IED/SERC, £180k, PI, 1989-92

4. Acquisition of Lexical Knowledge for Natural Language Processing Systems (ACQUILEX), Esprit-BRA, £250k, PI, 1989-92

5. Lexical Segmentation of Realistically Imperfect Speech, MRC/SERC/ESRC, £180k, CI, 1990-93

6. Prosodic and Post-lexical Phonological Processing, MRC/SERC/ESRC, £220k, CI, 1991-94

7. The Integrated Language Database, DTI-SALT/EPSRC, £180k, PI, 1994-96

8. Shallow Parsing and Knowledge Extraction for Language Engineering (SPARKLE) EC-LRE, £350k, PI, 1995-98

9. Computer Speech, Text and Internet Technology (CSTIT), Masters training Package, EPSRC, £500k, CI, 2000-2005

10. Robust Accurate Statistical Parsing (RASP), EPSRC, £156k, 2001-04

11. Integrating Literature, Experiments and Curation in Drosophila Genomics Research, BBSRC, BEP-II, £497k, PI, 2004-08

12. Accurate and Comprehensive Lexical Classification for Natural Language Processing Applications (ACLEX) EPSRC, £207k, PI, 2005-08

13. Scalable and Robust Grid-based Text Mining of Scientific Papers, STFC, PIPSS, £85k, CI, 2008-09

14. The Alta Institute, Cambridge Assessment, £8M, PI/Director, 2013-21

15. Virtual Investment Researcher, InnovateUK, EPSRC, £450K, PI, 2017-19

Coordinator (Externally-funded EC projects):

Acquisition of Lexical Knowledge (ACQUILEX-II), Esprit-BR, £750k, 1992-95

Teaching at Summer Schools (Invited Courses):

**1988** European Science Foundation Summer School on Computational Linguistics, Pisa, Computational Lexicology and Lexicography

**1994** European Summer School in Language, Logic and Information, Copenhagen, Robust Parsing

**1996** European Summer School in Language, Logic and Information, Prague, Workshops on Machine Learning and Robust Parsing

**2014** Topics in Evolutionary Linguistics, Paris, École Nationale Supériore

Consultancy / Industry:

1. SRI (Cambridge) 1989-91, grammar development
2. Toby Churchill Ltd 1991-94, augmentative and assistive communication
3. European Commission, Luxembourg, 1992-93, UK representative on LRE programme proposals evaluation committees
4. Cambridge University Press (Dictionaries) 1991-94,97, lexical database development and corpus processing tools
5. Volantia Ltd, 2001-2002, Technical Advisory Board
6. Cymfony Inc, Intelligent Information Extraction, 2000-2008, Technical Advisory Board
7. Cofounder, Director and CEO, iLexIR Ltd, 2003-now, a NLP consultancy, technology provider, and early stage investor
8. European Commission Projects, Advisory Boards, Semantically-Enabled Knowledge Technologies (SEKT, 2004-6), Medical Information Analysis and Retrieval (Khresmoi, 2010-14)
9. Cofounder and Director, Camtology Ltd, 2008-2011, an integrated text and image categorization and search company
10. Technical Advisor, TouchType / SwiftKey Ltd, 2009-2016, a predictive text entry technology provider
11. Cofounder, Director and Chief Science Officer, English Language iTutoring Ltd, 2015-2019, a cloud-based provider of advanced educational technology for language learning
12. Cytora Ltd, Information Extraction for Real-time Risk Assessment, 2016-now, Technical Advisory Board
13. All Street Ltd, Company Investment Reports, 2016-2019, Technical Advisor
14. ThoughtRiver Ltd, Legal Contract Triage, 2016-2019, Technical Advisory Board
15. Bird & Bird LLP, Patent Analytics, 2018-2019, Technical Advisor
16. DeepTech Labs, Incubator, 20212023-, Fellow
17. Cambridge Innovation Capital, 2021-now, Technical Advisor

Selected Invited Talks (1991-now):

**1991** Esprit Conference, Symposium on NLP, Brussels, *Lexical issues in natural language processing*

**1992** Academy of Sciences, Berlin, *Translation links in a typed unification-based theory of the lexicon*

**1993** SEPLN Conference, Santiago de Compostela, Spain, *Robust statistical parsing techniques*

**1993** Universals in the Lexicon, Schloss Dagstuhl, Germany, *Blocking and Defaults*

**1994** Esprit/DARPA Workshop on the Lexicon, Pisa, *Semi-productive sense extension*

**1994** Iberamia-94 Conference, Caracas, *Order independent and persistent typed default unification*

**1995** IEEE Signal Processing Society 1995 Workshop on Automatic Speech Recognition, Snowbird, Utah, *Statistical Language Modelling or Parse Decision Models for Natural Language Understanding?*

**1996** Max Planck Workshop on Underspecification, Berlin, *Underspecification and defaults in lexical semantic representation*

**1997** 8th Computational Linguistics in the Netherlands Conference, Nijmegan, *Language as a Complex Adaptive System*

**1998** 16th Machine Intelligence Workshop, York *The Acquisition of Grammar in an Evolving Population of Language Agents*

**1999** Learning Language in Logic Workshop (at ICML99), Bled, Slovenia, *Bayesian Learning of (Stochastic) Grammars*

**2000** 6th Diachronic Investigations in Generative Syntax Conference, U. Maryland, *Logistic Patterns of Language Change*

**2000** Symposium on the Origins of Semiosis, University of San Marino, *Coevolution of Language and the Language Faculty*

**2001** 13th Amsterdam Colloquium, *Coevolutionary models of languages and the language faculty*

**2002** 14th Beckman Frontiers of Science Symposium, National Academy of Sciences, Irvine CA, *The Interaction of Language Learning and Evolution*

**2003** Cambridge University ICT Horizon Seminar, *Text Mining via Statistical Natural Language Processing*

**2004** 7th Annual Computational Linguistics in the UK Conference, *Stochastic Computational Simulations of Languages as Complex Adaptive Systems*

**2004** National E-science Centre Workshop on E-science and Data Mining, Edinburgh, *Statistical Parsing for Text Mining from Scientific Articles*

**2005** 1st UK-NL Workshop on Language Evolution: Formal Modelling meets Empirical Data, Amsterdam, *Grammatical assimilation in language evolution: theoretical feasibility and empirical predictions*

**2006** GIACS (General Integration of Aplications of Complexity in Science) Workshop on Language Simulation, Warsaw, *Simulating iterated language learning and (thus) language change*

**2007** 8th Computational Linguistics in the Netherlands Conference, Nijmegan, *Symbolic or Statistical?: Approaches to Practical Robust Parsing*

**2008** 1st International Workshop on Automated Syntactic Annotations for Interoperable Language Resources, Hong Kong, *Making the RASP System more Interoperable*

**2008** Ernst Strungmann Forum, Int. Symposium on Biological Foundations and Origins of Syntax, Frankfurt, *What can formal or computational models tell us about how (much) language shaped the brain?*

**2008** Royal Statistical Society, Symposium on Text Mining, London, and Dagstuhl Seminar, Ontologies and Text Mining for Life Sciences *Bootstrapping an interactive information extraction system for FlyBase curation*

**2009** Palo Alto Research Centre, California, *Automated Asessment of EFL Examination Scripts*

**2009** 7th Brazilian Symposium in Information and Human Language Technology (STIL09), Sao Carlo, Brazil, *Learning Language, Evolving Languages*

**2010** American Association for Advancement of Science, Annual Meeting, San Diego, *Making the World's Scientific Information (More) Organized, Accessible, and Usable*

**2011** Dagstuhl Invited Seminar, Challenges in Document Mining, April, *Unsupervised Entailment Detection for IE Query Expansion*

**2011** EPSRC Network on Vision and Language Annual Workshop, *Integrating textual information extraction and visual similarity search for biomedical research papers*

**2012** Guest Lecture, TouchType Ltd. (SwiftKey), London, *Evolutionary Linguistics and Predictive Language Modelling*

**2013** Cambridge English, Centenary Conference, Cambridge, *Insights from computational linguistics in teaching and assessing written English*

**2014** Open University Workshop on Automated Feedback for Short Essay Answers, *Improving Cambridge English Write & Improve*

**2015** eLex Conference, Herstmonceux Castle, Invited Talk, *The Use of Lexical Resources in Cambridge English Write & Improve*

**2016** Cambridge English South Asia Partnership Summit, New Delhi, Invited Talk, *Using Machine Learning to Transform the Language Learning Landscape*

**2022** Bristol, Bangor Universities, and MBZUAI, Abu Dhabi, *Machine learning and natural language processing in support of interactive automated tutoring for non-native English writers*

**2023** IIT and IIIT, Delhi, and IIT, Mumbai, *Machine learning and natural language processing in support of interactive automated tutoring for non-native English writers*

Reviewing, Refereeing etc:

**Journals** *Computer Speech and Language* Editor, 2001-now, Editorial Boards, *Natural Language Engineering*, 1994-2012; *Computational Linguistics*, 1992-95; *Lingua*, 2003-06

**Programme Committees** Area Chairs: 5th European Association for Computational Linguistics, Utrecht, 1993; 32nd Association for Computational Linguistics, Las Cruces, New Mexico, 1994; 35th Association and 8th European Association for Computational Linguistics, Madrid, Spain, 1997; 1st, 2nd, 3rd, 4th, 5th and 6th International Conferences on Language Evolution, 1996 – 2010 and most years for ACL, EMNLP, CoNLL, LREC and Coling conferences and associated workshops such as BEA

**Publishers** CUP, OUP, Addison-Wesley, Lawrence Erlbaum, etc.

**Research Councils** 1991-now; EPSRC, EU-FP2-7, ESF, BBSRC, ESRC, MRC, NSF, SFI, FNSNF, ERC

**External Examining** Many PhDs: Edinburgh, Sheffield, Manchester, Sussex. Birkbeck, Oxford; University of Malta, Masters in HLT, 2018-20

Advisory Bodies:

**1992-1994** National Representative (Academic), Eur. Linguistic Research and Engineering Programme, Evaluation Committee

**1996** Programme Committee and Organiser of Language and Computation Courses for European Summer School in Language, Logic and Information, Prague, August 1996

**1997** Programme Committee and Organiser of Natural Language Processing Courses for European Language and Speech Network, Summer School, Barcelona, August 1997

**1997-2000, 2003-2005, 2011-now** Member, Engineering and Physical Science Research Council (EPSRC) Computing College, for evaluation of grant proposals

**2010-2012** Member, European Science Foundation Pool of Reviewers

**2005-2016** Member, Computational Linguistics in the UK (CLUK) Steering Committee

**2020-now** Member, Speech and Language Technology, Sheffield University EPSRC CDT Advisory Board

**2020–now** Member, NCCR Evolving Language, Review Panel

Professional Affiliations:

**1985–now** Member, Association for Computational Linguistics

**1994–now** Member, Linguistic Society of America

## Selected Publications

Boguraev, B.K. and E.J. Briscoe (1989, eds.) *Computational Lexicography for Natural Language Processing,* Longman, London.

Briscoe, E.J. (1987) *Modelling Human Speech Comprehension: A Computational Approach,* Chichester, UK: Ellis Horwood / New York: Wiley.

Briscoe, E.J. (2002, ed.) *Linguistic evolution through language acquisition: formal and computational models,* Cambridge University Press, Cambridge.

Briscoe, E.J., A.A. Copestake and V. de Paiva (eds.) (1993, eds.) *Defaults, Inheritance and the Lexicon,* Cambridge University Press.

## Internationally Refereed Journal Articles

Boguraev, B. & Briscoe, E. (1987) 'Large lexicons for natural language processing: utilising the grammar coding system of the *Longman Dictionary of Contemporary English*', *Computational Linguistics, vol.13.4,* 219–240.

Briscoe, E.J. (1999) 'The Acquisition of Grammar in an Evolving Population of Language Agents', *Electronic Trans. of Art. Intelligence (Special Issue: Machine Intelligence, 16. (ed) Muggleton, S., vol.Vol 3(B), www.etaij.org,* 44–77.

Briscoe, E.J. (2000) 'Grammatical Acquisition: Inductive Bias and Coevolution of Language and the Language Acquisition Device', *Language, vol.76.2,* 245–296.

Briscoe, E.J. (2008) 'Language Learning, Power Laws, and Sexual Selection', *Mind and Society, vol.7.1,* 65–76.

Briscoe E. J. and J. Carroll (1993) 'Generalised probabilistic LR parsing of natural language (corpora) with unification-based grammars', *Computational Linguistics, vol.19.1,* 25–60.

Briscoe, E.J. and A.A. Copestake (1999) 'Lexical Rules in Constraint-based Grammars', *Computational Linguistics, vol.25.4,* 487–526.

Bryant, C., Yuan, Z., Qorib, R., Cao, H., Ng, H.T., and Briscoe, E.J. (2023) 'Grammatical error correction: A survey of the state of the art', *Computational Linguistics, vol.49.3,* 643-701.

Calzolari, N. and E.J. Briscoe (1995) 'Acquilex I and II: acquisition of lexical knowledge from machine-readable dictionaries and text corpora', *Cahiers de Lexicographie, vol.LXVII.2,* 95–114.

Copestake, A.A. and E.J. Briscoe (1995) 'Semi-productive polysemy and sense extension', *Journal of Semantics, vol.12,* 15–67.

Copestake A.A, E.J. Briscoe, P. Vossen, A. Ageno, I. Castellon, F. Ribas, G. Rigau, H. Rodriguez, A. Samiotou (1995) 'Acquisition of Lexical Translation Relations from MRDs', *Journal of Machine Translation, vol.9.3,* 183–219.

Karamanis, N., R. Seal, I. Lewin, P. McQuilton, A. Vlachos, C. Gasperin, R. Drysdale, and E.J. Briscoe (2008) 'Natural Language Processing in aid of FlyBase curators', *BMC Bioinformatics, vol.9,* 193–205.

Lascarides, A., E.J. Briscoe, A.A. Copestake and N. Asher (1996) 'Order-independent and persistent default unification', *Linguistics and Philosophy, vol.19.1,* 1–89.

Lascarides, A., A.A. Copestake and E.J. Briscoe (1996) 'Ambiguity and Coherence', *Journal of Semantics, vol.13,* 41–65.

McQueen, J., A. Cutler, E.J. Briscoe and D. Norris (1995) 'Models of continuous speech recognition', *Language and Cognitive Processes, vol.10.3,* 309–332.

Yannakoudakis, H., O. Andersen, A. Geranpayeh, E.J. Briscoe, Nicholls, D. (2018) 'Developing an automated writing placement system for ESL learners', *Applied Measurement in Education, vol.DOI: 10.1080/08957347.2018.1464447,*

## Internationally Refereed Conference / Workshop Proceedings

Andersen, O., J. Nioche, E.J. Briscoe, J. Carroll (2008) 'The BNC parsed with RASP4UIMA', *Proceedings of the 6th Int. Conf. on Language Resources and Evaluation (LREC),* Marrakech, Morocco.

Boguraev, B.K., J. Carroll, E.J. Briscoe and C. Grover (1988) 'Software support for practical grammar development', *Proceedings of the 12th Int. Conf. on Comp. Ling.,* Budapest, Hungary, pp. 54–58.

Briscoe, E.J. (1987) 'Deterministic parsing and unbounded dependencies', *Proceedings of the 3rd Eur. Assoc. for Comp. Ling.,* Copenhagen, pp. 211–218.

Briscoe, E.J. (1989) 'Lexical access in connected speech recognition', *Proceedings of the 27th Assoc. for Comp. Ling.,* Vancouver, pp. 84–90.

Briscoe, E.J. (1996) 'The syntax and semantics of punctuation and its use in interpretation', *Proceedings of the ACL SIGPARSE Workshop on Punctuation in Computational Linguistics,* Morgan Kaufmann, pp. 1–8.

Briscoe, E.J. (1997) 'Co-evolution of language and of the language acquisition device', *Proceedings of the 35th Assoc. for Comp. Ling.,* Morgan Kaufmann, pp. 418–427.

Briscoe, E.J. (1998) 'Language as a complex adaptive system: co-evolution of language and of the language acquisition device ' in (eds) Coppen, P., van Halteren, H. and Teunissen, L. (eds.), *8th Meeting of Comp. Linguistics in the Netherlands,* Rodopi, Amsterdam, pp. 3–40.

Briscoe, E.J. (2001) 'From dictionary to corpus to self organising dictionary: Learning valency associations in the face of variation and change', *Proceedings of the Corpus Linguistics 2001 (CL2001),* Lancaster University, http://www.comp.lancs.ac.uk/ucrel/cl2000.html.

Briscoe, E.J. (2006) 'Language learning, power laws, and sexual selection' in Cangelosi, A., Smith, M., and Smith, K. (eds.), *Proc. of 6th Int. Conf. on Evolution of Language (EVOLANG6),* Word Scientific, London, pp. 19–26.

Briscoe, E.J. and B.K. Boguraev (1984) 'Control structures and theories of interaction in speech understanding systems', *Proceedings of the 10th Int. Conf. on Comp. Ling.,* Stanford, Ca., pp. 259–266.

Briscoe, E.J.. and Buttery, P. (2008) 'Linguistic Adaptions for Resolving Ambiguity', *Proceedings of the The Evolution of Language: 7th International Conference (EVOLANG7),* World Scientific Press.

Briscoe, E.J. and J. Carroll (1995) 'Developing and Evaluating a Probabilistic LR Parser of Part-of-Speech and Punctuation Labels', *Proceedings of the 4th Int. Workshop on Parsing Technologies (IWPT95),* Prague / Karlovy Vary, Czech Republic, pp. 48–58.

Briscoe, E.J. and J. Carroll (2002) 'Robust accurate statistical annotation of general text', *Proceedings of the 3rd Int. Conf. on Language Resources and Evaluation (LREC),* Las Palmas, Gran Canaria, pp. 1499–1504.

Briscoe, E.J. and J. Carroll (2006) 'Evaluating the Accuracy of an Unlexicalized Statistical Parser on the PARC DepBank', *Proceedings of the ACL-COLING 2006 Main Conf. Poster Session,* Sydney, Australia, pp. 41–48.

Briscoe, E.J., J. Carroll and R. Watson (2006) 'The Second Release of the RASP System', *Proceedings of the ACL-COLING 2006 Interactive Presentation Session,* Sydney, Australia, pp. 77–80.

Briscoe, E.J. and A. Copestake (1996) 'Controlling the application of lexical rules', *Proceedings of the ACL SIGLEX Workshop on Breadth and Depth of Semantic Lexicons,* Morgan Kaufmann, pp. 7–19.

Briscoe, E.J., A.A Copestake and B.K. Boguraev (1990) 'Enjoy the paper: lexical semantics via lexicology', *Proceedings of the 13th Int. Conf. on Comp. Ling. (COLING 1990),* Helsinki, pp. 42–47.

Briscoe, E., J. Carroll, J. Graham and A. Copestake (2002) 'Relational evaluation schemes', *Proceedings of the LREC'02 Workshop, Beyond PARSEVAL: Towards Improved Evaluation Measures for Parsing Systems,* Gran Canaria.

Briscoe, E.J., C. Grover, B.K. Boguraev and J. Carroll (1987) 'A formalism and environment for the development of a large grammar of English', *Proceedings of the 10th Int. Joint Conf. on Artificial Intelligence (IJCAI 1987),* Milan, Italy, pp. 703–708.

Briscoe, E.J., Harrison, K., Naish-Guzman, A., Parker, A., Siddharthan, A., Sinclair, D., Slater, M., Watson, R. (2010) 'Camtology: Intelligent Information Access for Science', *Proceedings of the NAACL HLT 2010: Demonstration Session,* Los Angeles, CA, pp. 1–4.

Briscoe, E.J. and N. Waegner (1992) 'Robust stochastic parsing using the inside-outside algorithm', *Proceedings of the AAAI Workshop on Probabilistically-Based NLP Techniques,* San Jose, Ca, pp. 39–53.

Bryant, C M. and E.J. Briscoe (2018) 'Language Model Based Grammatical Error Correction without Annotated Training Data', *Proceedings of the The 13th Workshop on Innovative Use of NLP for Building Educational Applications (BEA),* New Orleans, La.

Bryant, C M. Felice, and E.J. Briscoe (2017) 'Automatic Annotation and Evaluation of Error Types for Grammatical Error Correction', *Proceedings of the ACL,* Vancouver.

Bryant, C M., M. Felice, O. Andersen and E.J Briscoe (2019) 'The BEA-2019 Shared Task on Grammatical Error Correction', *Proceedings of the The 14th Workshop on Innovative Use of NLP for Building Educational Applications,* Florence.

Buttery, P. and E.J. Briscoe (2004) 'The Significance of Errors to Parametric Models of Language Acquisition', *Proceedings of the AAAI Spring Symposium on Language Learning: An Interdisciplinary Perspective,* Stanford, Ca. (Technical Report SS-04-05), pp. 15–20.

Carroll, J. and E.J. Briscoe (1992) 'Probabilistic normalisation and unpacking of packed parse forests for unification-based grammars', *Proceedings of the AAAI Symposium on Probabilistic Natural Language Processing,* Boston, Ma., pp. 33–38.

Carroll, J. & E.J. Briscoe (1996) 'Apportioning development effort in a probabilistic LR parsing system through evaluation', *Proceedings of the 2nd Conference on Empirical Methods in Natural Language Processing,* University of Pensylvania, Philadelphia, PA, pp. 92–100.

Carroll, J. and E.J. Briscoe (2002) 'High precision extraction of grammatical relations', *Proceedings of the 19th Int. Conf. on Computational Linguistics (COLING 2002),* Taipei, Taiwan, pp. 134–140.

Carroll, J., E.J. Briscoe and A. Sanfilippo (1998) 'Parser evaluation: a survey and a new proposal', *Proceedings of the 1st Int. Conf. on Language Resources and Evaluation (LREC),* Granada, pp. 447–454.

Carroll, J., G. Minnen, and E.J. Briscoe (1998) 'Can subcategorisation probabilities help a statistical parser?', *Proceedings of the ACL SIGDAT 6th Workshop on Very Large Corpora,* Morgan Kaufmann, pp. 118–126.

Carroll, J., G. Minnen and E.J. Briscoe (1999) 'Corpus annotation for parser evaluation', *Proceedings of the EACL-99 Workshop on Linguistically Interpreted Corpora (LINC-99),* Morgan Kaufmann, pp. 35–41.

Carter, D.M., E.J. Briscoe, and B.K. Boguraev (1987) 'A multi-purpose interface to an on-line dictionary', *Proceedings of the 3rd Eur. Assoc. for Comp. Ling.,* Copenhagen, pp. 63–69.

Copestake, A.A. and E.J. Briscoe (1991) 'Lexical operations in a unification-based framework', *Proceedings of the ACL-91 Workshop on Lexical Semantics and Knowledge Representation,* Berkeley, CA, pp. 89–101.

Cummins, R., Zhang, M. and E.J. Briscoe (2016) 'Constrained Multi-Task Learning for Automated Essay Scoring', *Proceedings of the ACL,* Berlin.

Cummins, R., H. Yannakoudakis and E.J. Briscoe (2016) 'Unsupervised Modeling of Topical Relevance in L2 Learner Text', *Proceedings of the 11th Int. Workshop on Innovative Use of NLP for Building Educational Applications,* San Diego, Ca.

Farag, Y., M. Rei and E.J. Briscoe (2017) 'An Error-Oriented Approach to Word Embedding Pre-Training', *Proceedings of the 12th Workshop on Innovative Use of NLP for Building Educational Applications,* Copenhagen.

Farag, Y., J. Valvoda, H. Yannakoudakis and E.J. Briscoe (2020) 'Analyzing Neural Discourse Coherence Models', *Proceedings of the 1st Workshop on Computational Approaches to Discourse,* EMNLP, online.

Farag, Y., H. Yannakoudakis and E.J. Briscoe (2018) 'Coherence Modeling and Adversarial Evaluation for Neural Automated Essay Scoring', *Proceedings of the 16th Annual Conference of the North American Chapter of the Association for Computational Linguistics: Human Language Technologies (NAACL 2018),* New Orleans, La.

Felice, M. and E.J. Briscoe (2015) 'Towards a standard evaluation method for grammatical error detection and correction', *Proceedings of the NAACL-HLT,* Denver, CO.

Gasperin, C. and E.J. Briscoe (2008) 'Statistical Anaphora Resolution in Biomedical Texts', *Proceedings of the 22nd Int. Conf. on Comp. Ling. (COLING 2008),* Manchester, pp. 257–264.

Gooding, S., and E.J. Briscoe (2019) 'Active Learning for Financial Investment Reports', *Proceedings of the Second Financial Narrative Processing Workshop,* Turku.

Karamanis, N., I. Lewin, R. Seal, R. Drysdale and E.J. Briscoe (2007) 'Integrating natural language processing with FlyBase curation', *Proceedings of the Pacific Symposium in Biocomputing,* Hawaii, pp. 245–253.

Kochmar, E., O. Andersen, and E.J. Briscoe (2012) 'HOO 2012 Error Recognition and Correction Shared Task: Cambridge University Submission Report', *Proceedings of the 7th Workshop on Innovative Use for Building Educational Applications (at NAACL-HLT 2012),* Montreal, Canada.

Kochmar, E., and E.J. Briscoe (2013) 'Capturing Anomalies in the Choice of Content Words in Compositional Distributional Semantic Space', *Proceedings of the Recent Advances in Natural Language Processing (RANLP 2013),* Hissar, Bulgaria.

Kochmar, E., and E.J. Briscoe (2014) 'Detecting Learner Errors in the Choice of Content Words Using Compositional Distributional Semantics', *Proceedings of the 25th Int. Conf. on Comp. Ling. (COLING 2014),* Dublin, Ireland.

Kochmar, E., and E.J. Briscoe (2015) 'Using Learner Data to Improve Error Correction in Adjective–Noun Combinations', *Proceedings of the 10th Workshop on Innovative Use of NLP for Building Educational Applications,* Denver, CO.

Korhonen, A. and E.J. Briscoe (2004) 'Extended Lexical-Semantic Classification of English Verbs', *Proceedings of the HLT/NAACL Workshop on Computational Lexical Semantics,* Boston, MA.

Korhonen, A., Y. Krymolowski and E.J. Briscoe (2006) 'A Large Subcategorization Lexicon for Natural Language Processing Applications', *Proceedings of the 5th International Conference on Language Resources and Evaluation (LREC06),* Genova, Italy.

McQueen, J.M., E.J. Briscoe (1991) 'A computational tool for examining lexical segmentation in continuous speech', *Proceedings of the Eurospeech-91,* Genova, Italy, pp. 697-700.

Medlock B., and E.J. Briscoe (2007) 'Weakly Supervised Learning for Hedge Classification in Scientific Literature', *Proceedings of the 45th Assoc. for Comp. Linguistics,* Prague, pp. 992-999.

Ng, H.T., S. Wu, E.J. Briscoe, C. Hadiwinoto, R. Susanto and C. Bryant (2014) 'The CoNLL-2014 Shared Task on Grammatical Error

Correction', *Proceedings of the 18th Conf. on Computational Natural Language Learning, CoNLL2014,* Baltimore.

Osborne, M. and E.J. Briscoe (1997) 'Learning stochastic categorial grammars', *Proceedings of the ACL Comp. Nat. Lg. Learning (CoNLL97) Workshop,* Morgan Kaufmann, pp. 80–87.

Preiss, J. and E.J. Briscoe (2003) 'Intermediate parsing for anaphora resolution? Implementing the Lappin and Leass non-coreference filters', *Proceedings of the ACL03 Workshop on Anaphora Resolution,* Morgan Kaufmann, pp. 1–6.

Preiss, J., A. Korhonen and E.J. Briscoe (2002) 'Subcategorization acquisition as an evaluation method for WSD', *Proceedings of the 3rd Int. Conf. on Lexical Resources and Evaluation,* Gran Canaria, Las Palmas, pp. 1551–1556.

Preiss, J., E.J. Briscoe and A. Korhonen (2007) '45th Assoc. for Comp. Linguistics', *Proceedings of the A System for Large-Scale Acquisition of Verbal, Nominal and Adjectival Subcategorization Frames from Corpora,* Prague, pp. 912–919.

Preiss, J., Gasperin, C. and E.J. Briscoe (2004) 'Can annaphoric definite descriptions be replaced by pronouns?', *Proceedings of the 5th Int. Conf. on Lexical Resources and Evaluation,* Lisbon.

Rei, M. and E.J. Briscoe (2010) 'Combining manual rules and supervised learning for hedge cue and scope detection', *Proceedings of the 14th Conf. on Computational Natural Language Learning: Shared Task, CoNLL2010,* Uppsala, Sweden, pp. 56–63.

Rei, M. and E.J. Briscoe (2011) 'Unsupervised Entailment Detection between Dependency Graph Fragments', *Proceedings of the 10th Int. Workshop on Biomedical Natural Language Processing (BioNLP 2011),* Portland, Oregon.

Rei, M. and E.J. Briscoe (2013) 'Parser lexicalisation through self-learning', *Proceedings of the North American Chapter of the Association for Computational Linguistics: Human Language Technologies (NAACL-HLT 2013),* Atlanta, Georgia.

Rei, M. and E.J. Briscoe (2014) 'Looking for Hyponyms in Vector Space', *Proceedings of the 18th Conf. on Computational Language Learning (CoNLL 2014),* Baltimore, Maryland.

Rei, M., M. Felice, Z. Yuan and E.J. Briscoe (2017) 'Artificial Error Generation with Machine Translation and Syntactic Patterns', *Proceedings of the 12th Workshop on Innovative Use of NLP for Building Educational Applications,* Copenhagen.

Sanfilippo, A., E.J. Briscoe, A.A. Copestake, T. Marti and A. Alonge (1992) 'Translation equivalence and lexicalization in the ACQUILEX LKB', to appear in *Proceedings of the 4th Int. Conf. on Theoretical and Methodological Issues in Machine Translation,* Montreal, Canada

Taylor, L., C. Grover and E.J. Briscoe (1989) 'The syntactic regularity of English noun phrases', *Proceedings of the 4th Eur. Assoc. for Comp. Ling.,* UMIST, Manchester, pp. 256–263.

Vlachos, A., Buttery, P., O Seaghdha, D. and Briscoe, E.J. (2009) 'Biomedical Event Extraction without Training Data', *Proceedings of the NAACL Wkshp on BioNLP,* Boulder, CO.

Vlachos, A., Gasperin, C., Lewin, I. and Briscoe, E. J. (2006) 'Bootstrapping the recognition and anaphoric linking of named entities in Drosophila articles', *Proceedings of the Pacific Symposium in Biocomputing,* Hawaii.

Vlachos, A., Ghahramani, Z., and Briscoe, E. J. (2010) 'Active learning for constrained Dirichlet process models', *Proceedings of the Proc. of 2010 Wkshp on GEOmetrical Models of Nat. Lg. Semantics, ACL2010,* Uppsala, Sweden, pp. 57–61.

Watson, R., Preiss, J. and Briscoe, E.J. (2003) 'The Contribution of Domain-independent Robust Pronominal Anaphora Resolution to Open-Domain Question-Answering', *Proceedings of the Int. Symposium on Reference Resolution and its Application to Question-Answering and Summarisation,* Venice.

Watson, R., E.J. Briscoe (2007) 'Adapting the RASP System for the CoNLL07 Domain-Adaptation Task', *Proceedings of the CoNLL07 Shared Task Paper Session,* Prague.

Watson, R., E.J. Briscoe and J. Carroll (2007) 'Semi-supervised Training of a Statistical Parser from Unlabeled Partially-bracketed Data', *Proceedings of the 10th Int. Workshop on Parsing Technologies (IWPT07),* Prague, Czech Republic, pp. 23–32.

Watson, R., J. Carroll and E.J. Briscoe (2005) 'Efficient extraction of grammatical relations', *Proceedings of the 9th Int. Workshop on Parsing Technologies (IWPT05),* Vancouver, Ca..

Xia, M., Kochmar, E. and E.J. Briscoe (2016) 'Text Readability Assessment for Second Language Learners', *Proceedings of the 11th Int. Workshop on Innovative Use of NLP for Building Educational Applications,* San Diego, Ca..

Xia, M., Kochmar, E. and E.J. Briscoe (2019) 'Automatic learner summary assessment for reading comprehension', *Proceedings of the NAACL-HLT Main Conference,* Minneapolis.

Yallop, J., Korhonen, A. and Briscoe, E.J. (2005) 'Automatic acquisition of adjectival subcategorisation from corpora', *Proceedings of the 43rd Assoc. for Comp. Ling.,* Morgan Kaufmann, pp. 614–621.

Yannakoudakis, H. and E.J. Briscoe (2012) 'Modeling coherence in ESOL learner texts', *Proceedings of the 7th Workshop on Innovative Use for Building Educational Applications (at NAACL-HLT 2012),* Montreal, Canada.

Yannakoudakis, H., E.J. Briscoe and Alexopoulou, D. (2012) 'Automating Second Language Acquisition Research: Integrating Information Visualisation and Machine Learning', *Proceedings of the Workshop on Visualization of Language Patterns and Uncovering Language History from Multilingual Resources (at EACL, 2012),* Avignon, France.

Yannakoudakis, H., E.J. Briscoe, and B.W. Medlock (2011) 'A New Dataset and Method for Automatically Grading ESOL Texts', *Proceedings of the 49th Annual Mtg of Assoc. for Comp. Linguistics,* Portland, Oregon.

Yannakoudakis, H., G. Lim, O. Andersen, E.J. Briscoe and F. Barker (2013) 'Automatic Writing Assessment and Feedback: An Approach to Improve Construct and Consequential Validity', *Proceedings of the 35th Language Testing Research Colloquium,* Seoul, Korea.

Yuan, Z., E.J. Briscoe, and M. Felice (2016) 'Candidate re-ranking for SMT-based grammatical error correction', *Proceedings of the 11th Int. Workshop on Innovative Use of NLP for Building Educational Applications,* San Diego, Ca..

Yuan, Z. and E.J. Briscoe (2016) 'Grammatical error correction using neural machine translation', *Proceedings of the Association for Computational Linguistics,* Berlin.

Zaidi, A., R. Moore and E.J. Briscoe (2017) 'Curriculum Q-Learning for Visual Vocabulary Acquisition', *Proceedings of the NIPS Workshop on Visually-Grounded Interaction and Language,* Long Beach, Ca.

Zhang, M., Chen, X., Cummins, R., Andersen, O. and E.J. Briscoe (2018) 'The Effect of Adding Authorship Knowledge in Automated Text Scoring', *Proceedings of the Proceedings of the 13th Workshop on Innovative Use of NLP for Building Educational Applications (BEA),* New Orleans, La.

**Book Chapters**

Briscoe, E.J. (1983) 'Determinism and its implementation in PARSIFAL' in K. Sparck Jones and Y. Wilks (eds.), *Automatic Natural Language Parsing,* Chichester, UK: Ellis Horwood / New York: Wiley, pp. 61–68.

Briscoe, E.J. (1987; revised 2nd Ed. 1992) 'Speech understanding' in A. Shapiro (eds.), *Encyclopedia of Artificial Intelligence,* New York: Wiley, pp. 1011–1018.

Briscoe, E.J. (1991) 'Lexical Issues in natural language processing' in E. Klein and F. Veltman (eds.), *Symposium on Natural Language and Speech (Esprit Conference, 1991),* Springer-Verlag, Berlin, pp. 39–68.

Briscoe, E.J. (1994) 'Prospects for practical parsing: robust statistical techniques' in P. de Haan and N. Oostdijk (eds.), *Corpus-based Linguistics: A Feschrift for Jan Aarts,* Rodopi, Amsterdam, pp. 67–95.

Briscoe, E.J. (1994/ 1998, forthcoming) 'Robust parsing' in Cole, R., Mariani, J., Uszkoreit, H., Zaenen, A., Zue, V. (eds.), *Survey of the State of the Art in Human Language Technology,* NSF/EC, http://www.cse.ogi.edu/CSLU / CUP, Cambridge.

Briscoe, E.J. (2000) 'Evolutionary perspectives on diachronic syntax' in (eds) Pintzuk, S., Tsoulas, G. and Warner, A. (eds.), *Diachronic Syntax: Models and Mechanisms,* Oxford University Press, Oxford, pp. 75–108.

Briscoe, E.J. (2003) 'Grammatical assimilation' in (eds) Christiansen, M. and Kirby, S. (eds.), *Language Evolution: the States of the Art,* Oxford University Press.

Briscoe, E.J. (2005) 'Coevolution of the language faculty and language(s) with decorrelated encodings' in (ed.) Tallerman, M. (eds.), *Language Origins: Perspectives on Evolution,* Oxford University Press, pp. 310–333.

Briscoe, E.J. (2009) 'What can formal or computational models tell us about how (much) language shaped the brain?' in (eds.) Bickerton, D.

and E. Szathmary (eds.), *Biological Foundations and Origins of Syntax: Proceedings of Ernst Strungmann Forum 2008,* MIT Press.

Briscoe, E.J. and J. Carroll (1996) 'A Probabilistic LR parser of part-of-speech and punctuation labels' in J. Thomas and M. Short (eds.), *Using Corpora for Language Research,* Longman, London, pp. 135–150.

Briscoe, E.J. and A.A. Copestake (1991) 'Sense extensions as lexical rules' in D. Fass, E. Hinkelman and J. Martin (eds.), *Computational approaches to non-literal language: metaphor, metonymy, idiom, speech acts, implicature,* Proc. of IJCAI Workshop, Sydney, pp. 12–20.

Briscoe, E.J., A.A Copestake and A. Lascarides (1995) 'Blocking' in St. Dizier, P. and Viegas, E. (eds.), *Computational Lexical Semantics,* Cambridge University Press, Cambridge, pp. 273–302.

Briscoe, E.J., Harrison, K., Naish-Guzman, A., Parker, A., Rei, M., Siddharthan, A., Sinclair, D., Slater, M., Watson, R. (2011) 'Intelligent Information Access from Scientific Papers' in Mayer, K., and Tait, J. (eds.), *Current Challenges in Patent Information Retrieval,* Springer, Dordrecht.

Carroll, J. and Briscoe, E.J. (2004) 'High precision extraction of grammatical relations' in Bunt, H., Carroll, J. and Satta, G. (eds.), *New Developments in Parsing Technology,* Kluwer Academic, Dordrecht, pp. 57–72.

Carroll, J., Minnen, G. and Briscoe, E.J. (2003) 'Parser evaluation using a grammatical relation annotation scheme' in Abeillé, A. (eds.), *Treebanks: Building and Using Parsed Corpora,* Dordrecht: Kluwer.

Copestake, A.A. and E.J. Briscoe (1992) 'Lexical Operations in a Unification Based Framework' in Pustejovsky, J. & Bergler, S. (eds.), *Lexical Semantics and Knowledge Representation; Proceedings of the 1st SIGLEX Workshop, Berkeley, Ca.,* Springer Verlag, Berlin, pp. 101–119.

Nunberg, G., Briscoe, E.J. and Huddleston, R. (2002) 'Punctuation' in Huddleston, R. and Pullum, G. (eds.), *Cambridge Grammar of the English Language,* Cambridge University Press, Cambridge, pp. 1723–1764.

## Patents

Briscoe, E.J., Medlock, B. and Andersen, O. (2017) Automated Assessment of Examination Scripts, US Patent 12/899,260 / 9679256, 6th Oct 2010.

## Technical Reports

Boguraev, B.K., E.J. Briscoe, J. Carroll, and A.A. Copestake (1991) *Database models for computational lexicography,* Research Report RC 17120, IBM Research Center, Yorktown Heights, New York and Proc. of Eur. Conf. on Lexicography 90, Vox.

Briscoe, E.J. (1994) *Parsing (with) Punctuation, etc.,* Xerox European Research Laboratory, Grenoble, MLTT-TR-002.

Briscoe, E.J. (2006) *An introduction to tag sequence grammars and the RASP system parser,* Cambridge University Computer Laboratory, TR-662.

Briscoe, E.J., J. Carroll, G. Carroll, S. Federici, G. Grefenstette, S. Montemagni, V. Pirrelli, I. Prodanof (1997) *Phrasal Parser Software,* EC LE2111 Sparkle Project WP-3.1.

Briscoe, E.J., G. Grefenstette, L. Padro and I. Serail (1994) *Hybrid Techniques for Training HMM Part-of-Speech Taggers,* Xerox European Research Laboratory, Grenoble, MLTT-TR-009.

Briscoe, E.J., A. Korhonen, N. Calzolari, S. Federici, S. Montemagni, V. Pirrelli, G. Carroll, M. Light, D. Prescher, M. Rooth, J. Carroll, D. McCarthy (1998) *Acquisition System for Syntactic and Semantic Type and Selection,* EC LE2111 Sparkle Project WP-7.

Briscoe, E.J., Medlock, B. and Andersen, O. (2010) *Automated Asessment of ESOL Free Text Examinations,* Cambridge University Computer Laboratory, TR-790.

Carroll, J., E. Briscoe and C. Grover (1991) *A development environment for large natural language grammars,* Cambridge University Computer Laboratory, TR-233.

Carroll, J., E. Briscoe and A. Sanfilippo (1999) *Parser evaluation: current practice. In 'Evaluation of Natural Language Processing Systems: Final Report',* EC DG-XIII LRE EAGLES Document EAG-II-EWG-PR.1 <ftp://issco-ftp.unige.ch/pub/ewg99draft.ps.gz>.

Grover, C., E.J. Briscoe and J. Carroll (1993) *The Alvey Natural Language Tools Grammar (4th Release),* Cambridge University Computer Laboratory, TR-284.

Osborne, M. and E.J. Briscoe (1998) *Minimum Description Length Incremental Learning During Natural Language Parsing,* EC LE2111 Sparkle Project WP-4.