

Alessandro Moschitti

CONTACT

Information Engineering and Computer Science Department
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OBJECTIVES

Theoretical and applied research for the design of intelligent information systems.

QUALIFICATION SUMMARY

- High quality research in Machine Learning, Information Retrieval, and Natural Language Processing (NLP).
- Leading research projects, especially for the design of real world applications.
- Teaching Machine Learning and its application in Natural Language Processing and Information Retrieval.

CURRENT POSITION

Assistant Professor (tenured)
Information Engineering and Computer Science Department
University of Trento - Italy

EXPERIENCE ABROAD

Visiting Research Scientist for collaborating on the Grand Jeopardy! Challenge and DeepQA (since 2009)
IBM Watson Research Center, New York, US

Visiting Professor (February-March 2011)
Computational Linguistic and Computer Science Department
University of Colorado at Boulder, CO, US

Visiting Professor (July-October 2008)
Center for Computational Learning Systems
Columbia University, New York, US

Senior Researcher of the JHU Summer Workshop (July-August 2007)
Exploiting Lexical & Encyclopedic Resources for Entity Disambiguation
Center for Language and Speech Processing
John Hopkins University, Baltimore, US

Visiting Research Scientist (February-March 2007)
Center for Computational Learning Systems
Columbia University, New York, US

Research Associate (Nov. 2002-July 2004)
Human Language Technology Research Institute
University of Texas at Dallas, US

Visiting Scholar (June 2002 - Nov. 2002)
Computer Science department - University of Texas at Dallas, US

Attended PhD and Master courses:

- *Artificial Intelligence* (CS 6364),
- *Advanced Professional and Technical Communication* (CS 5301),
- *Information Retrieval* (CS 6322),
- *Natural Language Processing and Internet Applications* (CS 6320).
- *Neural Networks and Machine Learning* (CS 6375).

EDUCATION

PhD in Computer Science and Control Engineering (May 2003)

University of Rome, “Tor Vergata”, Rome, Italy.

Thesis Title: *Natural Language Processing and Automated Text Categorization: a study on the reciprocal beneficial interactions*

Standard Text Categorization (TC) models use *bag-of-words* representation to design classification functions. Typical linguistic structures, e.g., morphology, syntax and semantics, are completely neglected. In turn, in most natural language applications, the semantic information generated by TC is not used. In this thesis, a study of the interactions between Natural Language Processing (NLP) and TC has been carried out with a particular attention to operational scenarios. Novel and efficient statistical TC models were designed and experimented with the main NLP techniques for document indexing. The results show the ineffectiveness of the current linguistic processing to enhance TC accuracy. On the contrary, preliminary experiments on the use of TC for Information Extraction, Question/Answering and Text Summarization systems have shown promising results.

MSc. in Computer Science, *summa cum laude* (March, 1998)

Department of Computer Science at University of Rome, “La Sapienza”, Rome, Italy

Thesis Title: *Neural Networks and NP-hard optimization problems*.

- Designing and implementation of Neural Networks for the approximate solution of the Traveling Salesman Problem (TSP).
- Extensive comparative analysis of neural networks and the optimal solutions provided by super-polynomial algorithms (for small TSP instances) or in related benchmarks.

RESEARCH

My research regards theoretical and applied machine learning, where the main application domains are Natural Language Processing, Information Retrieval and Data Mining. My work has been published in the top conferences of the four areas above, e.g., the Conferences of Association for Computational Linguistics (ACL, HLT-NAACL, Coling, EACL, EMNLP, CoNLL), the European and the International Conference of Information Retrieval (ECIR and CIKM), the European and International Conference of Machine Learning (ECML and ICML) and the International Conference of Data Mining (ICDM, CIDM). Some topics of my research are highlighted below.

MACHINE LEARNING

- **Kernel Methods:**

- *Kernels for Question Answering*: [Moschitti, CIKM 2008], [Moschitti and

Quarteroni, ACL 2008], [Moschitti, et al., ACL 2007], [Bloehdorn and Moschitti, ECIR 2007], [Quarteroni et al., ECIR 2007], [Bloehdorn and Moschitti, CIKM 2007], [Moschitti, CIKM 2008], [Moschitti, EACL 2009] [Moschitti, EACL 2009], [Moschitti and Quarteroni, IPMJ 2010] [Moschitti et al, EMNLP 2011]

- *Fast structural kernel based learning for Natural Language Applications:* [Moschitti, ECML 2006], [Moschitti, EACL 2006], [Aiolli et al, ICDM 2006], [Aiolli et al, CIDM 2006]; [Aiolli et al, CIDM 2006], [Moschitti and Zanzotto, ICML 2007], [Severyn and Moschitti, ECML 2010, ECML 2011].
- *Reverse kernel Engineering* [Pighin and Moschitti, CoNLL 2009, EMNLP 2009, CoNLL 2010]
- *Kernels for Re-Ranking* [Moschitti et al., CoNLL 2006, ECML-ws 2006], [Dinarelli et al, SLT 2008, EACL 2009, EMNLP 2009, Interspeech 2009, IEEE-TASL2010, IEEE 2011], [Nguyen et al, Coling 2010].
- *Tree Kernel Engineering for Semantic Role Labeling:* [Moschitti et al, CL-SRL2008], [Pighin et al., SemEval 2007], [Pighin and Moschitti, AIIA 2007], [Moschitti, EACL 2006], [Moschitti et al, EACL-ws 2006], [Moschitti, ACL 2004], [Moschitti et al., ACL-ws 2005, EACL-ws 2006, ECML-ws 2006], [Diab et al., ACL 2008], [Bonaventura et al, HLT 2009].
- *Kernels for Protein Active Site Classification:* [Cilia et al., AIIA2007; ECML-ws 2006];
- *Kernels for Textual Entailment Detection:* [Moschitti and Zanzotto, ICML 2007], [Zanzotto and Moschitti, Coling-ACL 2006], [Zanzotto et al., RTE 2006, RTE2007] and [Moschitti and Zanzotto, TextGraphs 2008], [Mehdad et al, 2010];
- *Semantic WordNet Kernels:* [Basili et al., Informatica 2006, CoNLL 2005, AIxIA 2005], [Bloehdorn et al, ICDM 2006];
- *Kernels for Coreference Resolution* [Versley et al., Coling 2008, ACL 2008, LREC 2008];

- **Categorization on texts:**

- Application of *Support Vector Machines, K-Nearest Neighbor, Naive Bayes, Probabilistic Indexing, Maximal Entropy* and *Expectation Maximization* [Moschitti, PhD-Thesis 2003], [Basili and Moschitti, Book 2005], [Basili et al., RIAO 2000, AAIJ 2006].
- Design of an *Optimal Parameter Tuning for Rocchio Text Classifier* [Moschitti, ECIR 2003], [Basili et al., IJCAI 2001], [Basili and Moschitti, ICTAI 2001].

- **Neural Networks:** Approximation of NP-hard problems via Recursive Hopfield Networks [Moschitti, NNW 2000].

NATURAL LANGUAGE PROCESSING AND INFORMATION RETRIEVAL

- Automatic labeling of predicate roles/arguments of FrameNet: [Moschitti et al, CL-SRL2008], [Moschitti, ACL 2004; EACL 2006] and PropBank [Moschitti et al., CoNLL-shared 2005; ECAI 2006][Giuglea and Moschitti, Coling-ACL 2006].

- Automatic detection of Textual Entailment: [Zanzotto and Moschitti, Coling-ACL 2006], [Moschitti and Zanzotto et al., ICML 2007], [Zanzotto et al., NLE 2009], [Mehdad et al., 2010].
- Question categorization in question taxonomies: [Moschitti et al. ACL 2007; Moschitti, ECML 2006; Croce et al, EMNLP2011, Moschitti et al. EMNLP 2011] or topical categories [Moschitti, ICTAI 2003] for Question Answering systems.
- Design of Question Answering systems: [Moschitti et al. ACL 2007; Quarteroni et al ECIR 2007; Moschitti, CIKM 2008; Moschitti & Quarteroni, ACL 2008; Moschitti, EACL 2009, Moschitti & Quarteroni, JIPM 2010].
- Automated Text Categorization: [Moschitti, PhD-Thesis 2003; Basili and Moschitti, Book 2005]
- Use of WordNet prior knowledge in Text Categorization: [Basili et al., Informatica 2006, CoNLL 2005, AIxIA 2005]
- Natural Language Processing for Text categorization and clustering (POS-tags, Complex Nominals, Proper Nouns, lemmas and word senses): [Moschitti, PhD-Thesis 2003], [Moschitti and Basili, ECIR 2004], [Basili et al. AAIJ 2006].
- Domain-based summarization via complex nominals and category-based weighting schemes: [Moschitti and Zanzotto, LREC 2002].
- Automatic Hypertext Construction via event extraction: [Basili et al., LREC 02].

AWARDS

- Google-Faculty Award 2011, *Opinion Mining from YouTube*
- IBM-Faculty Award 2011 generalizing *Watson system with Kernel Methods*
- Best Student Paper Award in Machine Learning at *The European Conference on Machine Learning and Principles and Practice of Knowledge Discovery in Databases (ECML PKDD) 2011*
- IBM-Faculty Award 2010 for the *Jeopardy!* Project
- Best Paper Award at *The International Conference on Computational Linguistics and Intelligent Text Processing 2010*
- Best Student Paper Award at *The third Workshop Analytics for Noisy Unstructured Text Data, 2010*

RESEARCH PROJECTS

US PROJECTS

IBM-JEOPARDY SYSTEM (July 2011-present)

Machine Learning Models for easy and fast domain adaptation of DeepQA technology

IBM Watson Center, New York, US

Role: PI

IBM-JEOPARDY SYSTEM (December 2009-July 2011)

The second grand challenge of machines to mankind after Deep blue. The IBM system competed with real contestants on America's favorite quiz show, Jeopardy.

IBM Watson Center, New York, US

Role: Co-PI

MEANTIME BETWEEN FAILURES (July 2008 – July 2009)

Machine Learning for the Prediction of Electric Component Failure

Columbia University and Consolidate Edison of New York, US

Role: Team Leader

ARDA AQUAINT PROGRAM (Nov. 2002 - July 2004)

Computational Implications for Advanced Question Answering

University of Texas at Dallas, US

Role: Team Leader

- *Syntactic and deep semantic annotation of Question/Answer data.*
- *Automated Predicate Argument Extraction: FrameNet semantic roles [Bejan et al., ACL-ws 2004] and PropBank semantic arguments [Moschitti, ACL 2004].*

EUROPEAN COMMUNITY PROJECTS

LIMOSINE (STREP, starting in November 2011)

Linguistically Motivated Semantic aggregation engines

Project#: IST 288024

University of Trento, Italy

Role: PI (Partner and WP Coordinator)

ETERNALS (Coordinate Action, since March 2010)

Trustworthy Eternal Systems via Evolving Software, Data and Knowledge

Project#: IST 247758

University of Trento, Italy

Role: PI (Coordinator of the Project consortium)

LIVINGKNOWLEDGE (FET, started on January 2009)

Opinion Mining from Multimedia Data, Knowledge Diversity Management, Fact and Event extraction/clustering

University of Trento, Italy

Role: WP Leader

LUNA (October 2007 – October 2010)

Spoken Language Understanding in multilingual communication systems

<http://www.ist-luna.eu/>

University of Trento, Italy

Role: Team Leader

Project#: IST 33549

- *Conceptual and (specialized) FrameNet Annotation Supervision.*
- *FrameNet parser for spoken dialog systems*

PRESTOSPACE (Sept. 2004 - January 2006)

An Integrated Solution for Audio-Visual Preservation and Access

<http://www.prestospace.org/>

University of Rome “Tor Vergata”, Italy

Project#: FP6-507336

Role: Team Leader

Modeling of machine learning algorithms for multimedia information management
[Basili et al., JDIM 2006].

NAMIC (Nov. 2000 - March 2002)

News Agencies Multilingual Information Categorization

<http://www.dcs.shef.ac.uk/nlp/namic/>

Project: IST-1999-12392

University of Rome “Tor Vergata”, Italy

Role: Researcher

- *Modeling and implementation of multilingual (English, Spanish and Italian) Text Classifiers* [Basili and Moschitti, IJAIT 2002] [Basili et al., AAIJ 2006].
- *Developing of document clustering models for automatic designing of category hierarchies* [Basili et al., IEEE 2003].
- *Modeling of semantic-based algorithms for cross-lingual (English, Spanish and Italian) hypertext construction in news agency domains.*

TREVI (Oct 1998 - Nov. 2000)

Text Retrieval and Enrichment for Vital Information

<http://cordis.europa.eu/esprit/src/23311.htm>

Project #23311

University of Rome “Tor Vergata”, Italy

Role: Researcher

Modeling and implementation of profile-based Text Classifiers trained with syntactic information [Basili et al., RIAO 2000; IJCAI-ws 1999; JADT 2000].

ITALIAN PROJECTS

E-VALUE (since January 2011)

Intelligent Information Systems for Ericsson book content classification

University of Trento, Italy

Role: Co-PI

PARLI (PRIN 2008 – since January 2010)

Portale per l'Accesso alle Risorse Linguistiche per l'Italiano

University of Trento, Italy

Role: PI (partner coordinator)

LIVEMEMORIES (PAT project, started on October 2008)

Automatic Managing Collective Multimedia Memories

University of Trento, Italy

Role: Team Leader

RSRNT (April 2007 - July 2008)

Relation extraction from Italian trial documents

CM-Sistemi SPA, Rome, Italy

Role: Co-PI

IBM project grant (October 2006 - January 2007)

Classification of Health Claims

Role: Technical Responsible

Modeling and implementation of Text Classifiers for the classification of claims addressed to the National Italian Health system.

MIND (July 2006 - October 2006)

Dialog System for Public Service Information

Consorzio CERTIA (*Centro per la Ricerca, lo Sviluppo e la Formazione nelle Tecnologie e Applicazioni Informatiche*), Rome, Italy

Role: Senior Researcher

Interactive Question Answering for dialog applications

SOFTWARE IMPLEMENTATION

Kernel Toolkit (for SVMs): available at <http://dit.unitn.it/~moschitt/Tree-Kernel.htm>

- Tree and string kernels, multi-vector data representation, ranking, etc.
- PropBank and FrameNet parsers [Moschitti, ACL 2004; Moschitti et al, CoNLL 2005; Moschitti et. al, ACL-ws 2005; Moschitti, ACL 2004; ECML2006; EACL 2006; HLT-NAACL 2006; Coppola et al, SLT 2009; Coppola et al, HLT-NAACL 2009; Coppola & Moschitti, LREC 2010].

Text Categorization Framework (TCF):

- All classification steps, from documents in free text format to the final f-measure evaluation (completely written in C language). It includes: binary as well as multi-class classification (ONE-vs-ALL), Feature Selection (DF, χ^2 , Rocchio-based,...), Rocchio text classifier, *The Parameterized Rocchio Classifier* [Moschitti, ECIR 2003], a K-NN text classifier, SVM text classifier (SVM-light software has been used to implement the binary classifiers), Document Clustering.

Named Entity Recognizer

- Implementation (in C/C++) of Identifinder (the well known Dan Bikel's named entity recognizer). Based on the Hidden Markov model and smoothing techniques. Training and evaluation on MUC-6 data.

Other

- Java implementation of the Rocchio Text Classifier (NAMIC project).
- Automatic IperText construction.
- Word Sense Disambiguation algorithms based on WordNet glosses.

SOFTWARE DESIGN (WITH STUDENTS)

- 8 SRL systems: three PropBank systems for English, one system for Arabic PropBank, two FrameNet parsers for English (one of which was the most accurate system in the SRL challenge of SENSEVAL 2004), and one parser for Italian FrameNet.
- Relation Extraction System for ACE [Nguyen et al, EMNLP 2009]
- Relation Extraction System for Wikipedia [Nguyen and Moschitti, ACL 2011, IJCNLP 2011]

- System for concept segmentation and labeling of speech dialogs [Dinarelli et al, IEEE2011]
- Fine Grained Opinion Analysis, [Johansson and Moschitti, CoNLL&COLING 2010, ACL 2011]
- Toolkit for fast learning with structural kernels [Severyn and Moschitti, ECML 2010 and 2011]
- Semantic parsing of natural language questions to map them in SQL queries [Giordani and Moschitti, ECML 2009]
- Named Entity recognizer based on structural reranking [Nguyen et al, COLING 2010]
- Textual Entailment Recognition systems [Moschitti and Zanzotto, ICML 2007]
- Coreference systems based on structural kernels [Vesley et al, COLING 2008]

INTERNATIONAL COMPETITIONS

- Automatic Labeling of Semantic Role task. Rank 1st [Bejan et al., ACL-ws 2004]:
 - International Organization: Senseval-3 (<http://www.senseval.org/>)
 - Task Definition: <http://www.clres.com/SensSemRoles.html>
 - System Results: (<http://www.cse.unt.edu/~rada/senseval/senseval3/proceedings/pdf/litkowski1.pdf>)
- Recognizing Textual Entailment Challenge, 2nd Challenge, Rank 2nd. [Zanzotto et al, RTE 2006] [Zanzotto and Moschitti, ACL-Coling 2006]
 - International Organization: PASCAL - Pattern Analysis, Statistical Modeling and Computational Learning (<http://www.pascal-network.org/Challenges/RTE2/>)
 - System Results (zanzotto): <http://www.pascal-network.org/Challenges/RTE2/Results/>
- Semantic Role Labeling shared task [Moschitti et al., CoNLL 2005]:
 - International Organization: CoNLL-shared task (<http://www.lsi.upc.es/~srlconll/>)
 - Task Definition: <http://www.lsi.upc.es/~srlconll/spec.html>
 - System Results: <http://www.lsi.upc.es/~srlconll/st05/st05.html>
- Recognizing Textual Entailment Challenge, 3rd Challenge. [Zanzotto et al, RTE 2007] International Organization: PASCAL - Pattern Analysis, Statistical Modeling and Computational Learning (<http://www.pascal-network.org/Challenges/RTE3/>)
 - System Results (zanzotto): <http://www.pascal-network.org/Challenges/RTE3/Results/>
- One of the top ranking systems participating in RTE4 and RTE5 (<http://www.nist.gov/tac/2009/RTE/>) [Medhad et al., HLT-NAACL 2010]

TEACHING (1999-PRESENT)

Department of Information Engineering and Computer Science at University of Trento, Italy

Teacher for the following courses:

- PhD level course: *Structured Input-Output Support Vector Machines*
Academic years: 2009-2010-2011
- PhD level course: *Advanced Kernel Methods*
Academic years: 2008-2009
- MSc Level (Laurea Specialistica): *Machine Learning*
Academic years: 2008-2009-2010-2011
- MSc Level in Human Language Information Technology and Interfaces: *Machine Learning for Natural Language Processing (and Information Retrieval)*
Years: 2007-2008-2009-2010-2011
- MSc Level (Laurea Specialistica): *Computer Science Foundations Informatica per Matematica e Fisica*
Academic years: 2009-2010-2011
- MSc Level (Laurea Specialistica): *Computer Science Foundations (Informatica Generale per Matematica)*
Academic years: 2008-2009-2010
- MSc Level (Laurea Specialistica): *Computer Science Foundations I (Informatica Generale I)*
Academic years: 2007-2008
- MSc Level (Laurea Specialistica): *Computer Science Foundations II (Informatica Generale II)*
Academic years: 2007-2008

Computer Science Department at University of Rome “Tor Vergata”, Italy

Teacher/Teaching Assistant for the following courses:

- MSc Level: *Statistical machine learning for Information Retrieval” within the course of Information Retrieval: “Metodi per la gestione e il recupero di informazione*
Academic years: 2006-2007
- MSc Level: *Statistical machine learning for Information Retrieval within the Distributed Database course*
Academic years: 2005-2006
- MSc Level: *Statistical machine learning for Information Retrieval within the Distributed Database course*
Academic year: 2004-2005
- MSc Level: *Fondamenti d’Informatica I*
Academic year: 2001-2002
- MSc Level: *Fondamenti d’Informatica II (Computer Engineering)*
Academic year: 2001-2002

- MSc Level: *Fondamenti d'Informatica II* (for Mechanical Engineering)
Academic year: 2001-2002
- MSc Level: *Fondamenti d'Informatica II*
Academic year: 2001-2002

Department of Cognitive Science at University of Trento (Rovereto), Italy

- PhD level: Machine Learning for Cognitive Science (2009-2010-2011)

Department of Computer Engineering at University of Padova, Italy

- PhD level: Learning with Structural Kernels: from theory to practice (2009-2010)

SCHOLARSHIPS/GRANTS

1. Electric Power Grid – Columbia University (August 2008 – October 2008)
2. RSRNT project – CM Sistemi SPA (April 2007 - July 2008)
3. JHU Summer Workshop – Johns Hopkins University (July – August 2007)
4. Shallow Semantic Parser for Arabic – Columbia University (Feb. 2007 – March 2007)
5. European project: LUNA (April 2007 – Sept. 2007).
6. Italian project: Mind (May 2006 – Sept. 2006)
7. Italian project: IBM (Oct. 2006 – Feb. 2007)
8. *Assegno di Ricerca*: “Apprendimento automatico e kernel methods per l'apprendimento di conoscenza linguistica” – University of Rome “Tor Vergata” (Sept. 2005 – Sept. 2006).
9. European project: PrestoSpace (Sept. 2004 – Sept. 2005).
10. Participation Scholarship at the 25th European Conference on Information Retrieval Research, 2003
11. US Project: ARDA AQUAINT, *Computational Implications for Advanced Question Answering*, (Nov. 2002 – July 2004).
12. European project: NAMIC (Nov. 2000 – March 2002).
13. European project: TREVI (Oct. 1998 – Nov. 2000).
14. Participation Scholarship at 7th Conference of the Association for Artificial Intelligence, 2001.

ACADEMIC ACTIVITIES

Book and book chapter reviewer

- Christopher D. Manning, Prabhakar Raghavan and Hinrich Schütze, *Introduction to Information Retrieval*, Cambridge University Press. 2008.
- Genres on the Web, Computational Models and Empirical Studies, Alexander Mehler, Serge Sharoff, Georg Rehm and Marina Santini (eds.)

- Martha Palmer, Daniel Gildea, Nianwen Xue. *Semantic Role Labeling*, Paperback © 2010 - ISBN 1598298313.
- Kai-Uwe Kuehnberger, *Modelling, Learning, and Processing of Text Technological Data Structures*, to appear in 2011 in Springer's Computational Intelligence series.

International Founded Project Reviewer

- Swiss National Science Foundation
- The French National Research Agency (ANR)
- National Italian Agency (PRIN)

International PhD Committee Member

- Tapio Pahikkala, *New kernel functions and learning methods for text and data mining* PhD Thesis - Faculty of Mathematics and Natural Sciences – University of Helsinki – Finland.
- Richard Johansson. *Dependency-based Semantic Analysis of Natural-language Text*. Department of Computer Science, Lunds University. Defended on December 5, 2008. (Chair of the committee)
- Beñat Zafirain Sierra. *Semantic Role Labeling: Role Inventories and Selectional Preferences*, Technical University of Catalonia, September 2010.
- Sun Jun, *Kernel Methods for NLP and SMT*, PhD Thesis - National University of Singapore (NUS), 2011.

Editorial Board

- Special issue of the Computational Linguistics Journal on *Semantic Role Labeling* (guest editorial board since 2006 to 2008).
- Special issue of the Natural Language Engineering on Distributional Lexical Semantics (guest editorial board 2009)
- Special issue of the Natural Language Engineering on Textual Entailment (guest editorial board 2008)
- Special issue of the Natural Language Engineering on *Statistical Learning of Natural Language Structured Input and Output* (**guest editor 2010-12**).
- Editorial Board of the Journal on Data Semantics (JoDS, since 2011)

Reviewer for the following journals:

- Information Retrieval Journal (2010-11)
- The Journal of Machine Learning Research (JMLR) (year 2009)
- Elsevier, Information Science (year 2009,2011)
- The Machine Learning Journal (MLJ) Special Issue on Mining and Learning with Graphs (year 2007)
- Computational Linguistics Journal (year 2007)
- The Journal of Natural Language Engineering (years 2006, 2007, 2008, 2009, 2011)
- ACM Transactions on Asian Language Information Processing (year 2008, 2010, 2011).

- Journal for Computational Linguistics and Language Technology (GLDV-Journal) a special issue on "Ontologies in Text Technology" (year 2007)
- International Journal of Computer Systems Science & Engineering (year 2007)
- The Journal of IEEE Transactions on Knowledge and Data Engineering (years 2006, 2007).
- The International Journal of Artificial Intelligence Tools (year 2006, 2011)
- The Journal of IEEE Transactions on Pattern Analysis and Machine Intelligence (Year 2006).
- The Journal of Artificial Intelligence Research (years 2005, 2008, 2009, 2010).
- Artificial Intelligence Journal (Year 2010 - 2011)
- The Journal of IEEE Intelligent Information Systems (year 2004).
- The Journal of Machine Learning Research (year 2002).
- Computational Intelligence Journal (2011)
- ACM-TIST 2011
- Information Science Journal 2011
- Journal of Web Semantics 2011
- Transaction on Information Systems 2011
- AI communications 2011

Program committee member for the following International Conferences and Workshops:

- Geometrical Models for Natural Language Processing (workshop) 2011
- The Twenty-Fifth Conference on Artificial Intelligence AAAI-2011.
- The International Conference on Human Language Technology and the Association for Computational Linguistics (HLT-ACL 2008) (full paper and short paper sections).
- The International Conference on Human Language Technology and the North Chapter of the Association for Computational Linguistics (HLT-NAACL 2007) (full paper and short paper sections).
- The forty-five International Conference on Association for Computational Linguistics (ACL 2007, 2010).
- The forty-fourth International Conference on Association for Computational Linguistics (ACL-COLING 2006) – two areas (Computational Semantics and Syntactic Parsing).
- The International Conference on Computational Linguistics (COLING 2004, 2008, 2010).
- The thirtieth International Conference on Information Retrieval (SIGIR 2002, 2006, 2007, 2009, 2010, 2011).
- The twelfth International Conference on Natural Language Learning (CoNLL 2006, 2008, 2009, 2010, 2011).

- CoNLL shared task 2011
- The Conference on Empirical Methods for Natural Language Processing (EMNLP-2008 – three different areas Computational Semantics, Text and Sentiment Classification, Word Sense Disambiguation – EMNLP 2010 (three areas) – EMNLP 2011 (three areas: Question Answering, Semantics, Machine Learning)
- The eleventh Conference on Empirical Methods for Natural Language Processing and Conference on Computational Natural Language Learning (EMNLP-CoNLL 2007) – three different areas (Computational Semantics, Text and Sentiment Classification, Word Sense Disambiguation).
- The European Conference on Computational Linguistics (EACL 2006, 2009).
- The European Conference on Machine Learning (ECML 2008, 2010).
- TextGraphs-3: Graph-based Algorithms for Natural Language Processing (2008).
- Towards Genre-enabled search engines: the impact of NLP 2007, International Workshop held with RANLP 2007 conference.
- Geometrical Models of Natural Language Semantics – (EACL-workshop 2009, 2011).
- IEEE Automatic Speech Recognition and Understanding Workshop (ASRU 2007, 2009)
- Conference on Information and Knowledge Management (CIKM 2011)
- Conference on Theory of Information Retrieval (ICTIR 2011)
- Annual Conference of the International Speech Communication Association (Interspeech 2011).
- International Joint Conference on Artificial Intelligence (IJCAI 2011)

Reviewer for the following International Conferences and Workshops:

- Conference on Language Resources and Evaluation (LREC 2008, 2009, 2010).
- The European Conference on Information Retrieval (ECIR 2005).
- The Web Intelligence Conference 2003.
- International Conference on Acoustics, Speech, and Signal Processing (ICASSP 2008, 2009)
- IEEE Symposium Series on Computational Intelligence (SSCI 2011)

Organizer/Chair of Conferences and Workshops

- Tutorial Chair for ECML PKDD 2012
- Workshop chair for EACL 2012
- Area Chair of ECML PKDD 2012
- Area co-Chair of the Statistical and Machine Learning Methods for ACL 2011.
- Co-Chair of The First International Workshop in Trustworthy Eternal Systems via Evolving Software, Data and Knowledge (ETERNALS11) at the international conference, *fet¹¹*.

- Chair of the track: Trustworthy Eternal Systems via Evolving Software, Data and Knowledge (ETERNALS) at the international conference, ISOLA 2010.
- Co-Chair of the 6th Edition of the workshop “Graph-based Methods for Natural Language Processing” - TextGraphs 2011.
- Co-Chair of the 5th Edition of the workshop “Graph-based Methods for Natural Language Processing” - TextGraphs 2010.
- Chair of a PhD defense committee of Lund 2008.
- Organization Committee member for the Conference for the Italian Association of Artificial Intelligence 2007 (AIIA2007) conference.
- Chair of the SCIE 2007 workshops.
- Co-Chair of the EACL 2006 Workshop *Learning Structured Information in Natural Language Applications*.
- Member of the Organization Committee of SCIE02 (Summer Convention on Information Extraction), University of Rome “Tor Vergata”, Italy.
- Session chair at ACL-HLT 2011
- Session chair at EMNLP 2011
- Session chair at the International Conference of Language Resources (LREC 2010).
- Session chair of The International Conference on Computational Linguistics (ACL 2010).
- Session chair at the Conference on Information and Knowledge Management 2008.
- Session chair at SCIE 2007.
- Session chair at the European Conference of Computational Linguistics (EACL 2006).
- Session chair International Conference of Artificial Intelligence Tools (ICTAI 2001).

Tutorials:

International Conference of Computational Linguistics (COLING 2010)

China, Beijing

Title: *Kernel Engineering for Fast and Easy Design of Natural Language Applications*

International Conference on Spoken Language Processing (Interspeech 2010)

Tokyo, Japan

Title: *Kernel Engineering for Fast and Easy Design of Natural Language Applications*

Semantic Web Applications and Perspectives (December 2007)

Dipartimento di Informatica – Università degli Studi di Bari - Italy

Title: *Support Vector Machines and Kernel Methods for Robust Extraction of Textual Knowledge*

Invited Talks in Workshops

Workshop on DDR-2011: Diversity in Document Retrieval

In conjunction with ECIR 2011 - the 33rd European Conference on Information Retrieval
18th April 2011, Dublin, Ireland

Title: *Analysis of Document Diversity through Sentence-Level Opinion and Relation Extraction*

Workshop on Human Language Technologies for Italian AI*IA (December 1st 2010)
In conjunction with the 11th AI*IA Symposium on Artificial Intelligence
University of Brescia, Italy

Title: *Natural Language Parsing and applications to DEEPQA*

Workshop on Multimodal Interactive Question Answering (March 2010)

University of Bolzano (Italy)

Title: *Kernels on Syntactic/Semantic Structures for Answer Selection*

Workshop of Qall-me project: (September 2009)

Fondazione Bruno Kessler (Trento – Italy)

Title: *Shallow Semantics for Question Answering: a supervised machine learning perspective*

Workshop on Research Challenges in Speech and Natural Language Processing (Sept. 2005) *Conference of Italian Association for Artificial Intelligence*

Università di Milano “Bicocca” (Italy)

Title: *Kernel Methods for Fast Design of Accurate Natural Language Applications*

Seminars

Computer Science Department, University of Colorado at Boulder (February 2011)

Title: Kernel Engineering: The Natural Language Processing Case

The Institute of Cognitive science, University of Colorado at Boulder (February 2011)

Title: Shallow Semantic Models for Automatically Answering Complex Jeopardy Questions

IBM Watson Research Center of New York, US (July 2011)

Title: State-of-the-art Kernels in Natural Language Processing

IBM Watson Research Center of New York, US (October 2009)

Title: Advanced Machine Learning and Natural Language Processing for Question Classification and Answer Reranking

University of Saarbrücken, Germany (July 2009)

Title: Kernel Methods for Semantic Role Labeling and Spoken Language Understanding

Computer Science Department (October, 2008)

Berkeley University, California

Title: *Semantic Role Labeling and Kernel Methods for Question Answering and Spoken Language Understanding*

Computer Science Department (October, 2008)

Columbia University, New York, US

Title: *Kernel Methods for Shallow Semantic Processing: from Question Answering to Spoken Language Understanding*

Fondazione Bruno Kessler – Trento (June 2008)

Title: *Kernels on Linguistic Structures for Question Answering Systems*

School of Informatics (February 2008)

University of Edinburgh - England

Title: *Kernel Methods and Support Vector Machines for Shallow Semantic Processing*

Computer Science Department (October 2007)

Carnegie Mellon University - Qatar

Title: *Recent Advances in Information Retrieval: The Text Categorization and Question Answering Cases*

Center for Language and Speech Processing (July 2007)

John Hopkins University - Baltimore

Summer Workshop on Human Language Technology

Title: *Kernel Engineering for Natural Language Processing Applications*

Center for Computational Learning Systems (March 2007)

Columbia University, New York, US

Title: *Effective and Efficient Kernels for Texts*

Center for Computational Learning Systems (February 2007)

Columbia University, New York, US

Title: *Kernel Engineering for Natural Language Processing Applications*

Dipartimento di Matematica Pura ed Applicata (May 2006)

Università di Padova

Title: *Tree Kernels for Natural Language Learning*

Department of Information and Communication Technology (February 2006)

Università di Trento

Title: *Advanced Machine Learning for NLP-based Information Retrieval*

Dipartimento di Scienze Fisiche, Sezione Informatica (Nov. 2005)

Università "Federico II" di Napoli

Title: *Kernel Methods for Natural Language Learning*

Information Science Institute (ISI) - Los Angeles – US, (July 2005)

Title: *Kernel Methods for Semantic Role Labeling*

ITC-IRST – Trento, (Dec. 2004)

Title: *Kernel Methods for Semantic Shallow Parsing*

Seminar for the ARDA commission at the Human Language Technology Research Institute (Nov. 2002)

University of Texas at Dallas

Title: *Efficient Text Categorization*

PUBLICATIONS

Books

1. [Basili and Moschitti, Book 2005], Roberto Basili and Alessandro Moschitti, *Automatic Text Categorization: from Information Retrieval to Support Vector Learning*. Aracne editrice, Rome, Italy.
http://www.365bookmark.it/scheda_libro.lasso?codice_prodotto=20051111175219547919
2. [Moschitti, PhD-Thesis 2003], Alessandro Moschitti, *Natural Language Processing and Text Categorization: a study on the reciprocal beneficial interactions*. PhD thesis, University of Rome *Tor Vergata*, Rome, Italy, 2003.

Edited books

3. [Matveeva et al., edited book 2011], Irina Matveeva, Alessandro Moschitti, Lluís Marquez and Fabio Massimo Zanzotto, *Graph-based Methods for Natural Language Processing*, proceedings of the *TextGraphs* workshop held with the 49th International Conference of the Association for Computational Linguistics, Portland, USA, 2011.
4. [Banea et al., edited book 2010], Carmen Banea, Alessandro Moschitti, Swapna Somasundaran and Fabio Massimo Zanzotto, *Graph-based Methods for Natural Language Processing*, proceedings of the *TextGraphs* workshop held with the 48th International Conference of the Association for Computational Linguistics, Upsala, Sweden, 2010.
5. [Moschitti, ISOLA 2010 – edited special session], Alessandro Moschitti, *Introduction to the EternalS Track: Trustworthy Eternal Systems via Evolving Software, Data and Knowledge*. In Proceedings of the 4th International Symposium On Leveraging Applications of Formal Methods, Verification and Validation. Springer Verlag, 2010.
6. [Basili and Moschitti, edited book 2006], Roberto Basili and Alessandro Moschitti, *Learning Structured Information in Natural Language Applications*, proceedings of the workshop held with the eleventh International Conference on European Association for Computational Linguistics, Trento, Italia, 2006.

Miscellaneous

Tutorials notes

7. [Moschitti, Coling 2010], Alessandro Moschitti, *Kernel Engineering for Fast and Easy Design of Natural Language Applications*, International Conference of Computational Linguistics (COLING 2010). China, Beijing, 2010.
8. [Moschitti, CL2011] Alessandro Moschitti. *Book review: Semantic role labeling*. *Computational Linguistics*, 2011.

Book Chapters (over 40 pages)

9. [Basili and Moschitti, 2008] Roberto Basili and Alessandro Moschitti, *Apprendimento Automatico*. In *Instrumentum vocale: intelligenza artificiale e linguaggio*; Bianchini F., Gliozzo A., Matteuzzi M. editors, Bononia University Press, 2008.
10. [Moschitti, SFM2011] Alessandro Moschitti, *Kernel-Based Machines for Abstract and Easy Modeling of Automatic Learning*. In: *Formal Methods for Eternal Networked Software Systems - 11th International School on Formal Methods for the Design of*

Computer, Communication and Software Systems, SFM 2011, pages 458-503, Bertinoro, Italy, June 2011. Advanced Lectures, Springer, Lecture Notes in Computer Science.

Journals

11. [Dinarelli et al. IEEE2011] M. Dinarelli, A. Moschitti, and G. Riccardi. *Discriminative Reranking for Spoken Language Understanding*. IEEE Transaction on Audio, Speech and Language Processing, to appear in 2011.10.1109/TASL.2010.2093520.
12. [Moschitti and Quarteroni, IPMJ 2010], Alessandro Moschitti and Silvia Quarteroni, *Linguistic Kernels for Answer Re-ranking in Question Answering Systems*, Information and Processing Management: an International journal, ELSEVIER, 2010.
13. [Zanzotto et al, FIJ2010], Fabio Massimo Zanzotto, Lorenzo Dell'Arciprete, and Alessandro Moschitti, *Efficient Graph Kernels for Textual Entailment Recognition*. Published by the European Association for Theoretical Computer Science, EATCS. *Fundamenta Informaticae Journal*. (accepted)
14. [Giannone et al, IJDAR2010], Cristina Giannone, Roberto Basili, Paolo Naggari and Alessandro Moschitti, *Supervised Semantic Relation Mining from Linguistically Noisy Text Documents*, International Journal on Document Analysis and Recognition (IJDAR) DOI 10.1007/s10032-010-0138-0
15. [Hahn et al., IEEE-TASL2010] S. Hahn, M. Dinarelli, C. Raymond, F. Lefevre, P. Lehnen, R. De Mori, A. Moschitti, H. Ney, G. Riccardi, *Comparing Stochastic Approaches to Spoken Language Understanding in Multiple Languages*, IEEE Transaction on Audio, Speech and Language Processing, ISSN: 1558-7916, Digital Object Identifier: 10.1109/TASL.2010.2093520
16. [Moschitti et al, CLJ2008], Alessandro Moschitti, Daniele Pighin and Roberto Basili. *Tree Kernels for Semantic Role Labeling*, Special Issue on Semantic Role Labeling, Computational Linguistics Journal. March 2008.
17. [Zanzotto et al, NLE2009], Fabio Massimo Zanzotto, Marco Pennacchiotti and Alessandro Moschitti, *A Machine Learning Approach to Textual Entailment Recognition*, Special Issue on Textual Entailment Recognition, Natural Language Engineering, Cambridge University Press.
18. [Basili et al., AAIJ 2006], Roberto Basili, Alessandro Moschitti and Maria Teresa Pazienza, *Extensive evaluation of efficient NLP-driven text classification*. In Applied Artificial Intelligence Journal in July 2006.
19. [Basili et al., JDIM 2006], Roberto Basili, Marco Cammisa, Emanuele Donati and Alessandro Moschitti, *Semantic indexing and hyperlinking of multimedia news: the RitroveRAI System*, in Journal of Digital Information Management.
20. [Basili et al., INFORMATICA 2006] Roberto Basili, Marco Cammisa and Alessandro Moschitti, *A Semantic Kernel to classify texts with very few training examples*, in Informatica, an international journal of Computing and Informatics.
21. [Basili et al., IEEE 2003], Roberto Basili, Alessandro Moschitti, Maria Teresa Pazienza and Fabio Massimo Zanzotto, *Personalizing Web publishing via information extraction*. Special Issue on Advances in Natural Language Processing, IEEE Intelligent System, IEEE Computer Society, January/February 2003.
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23. [Moschitti, NNW 2000], Alessandro Moschitti, *A novel neural approximation*

technique for integer formulation of the asymmetric traveling salesman problem. International Journal on Neural Network and Mass-Parallel Computing and Information Systems, ICS editor, Vol. 10, 653-664, 2000.

Conferences and Workshops (ws) in Chronological order

Year 2011

24. [Croce et al. CIKM2011] Danilo Croce, Alessandro Moschitti, and Roberto Basili. *Semantic Convolution Kernels Over Dependency Trees*. In Proceeding of ACM 21th Conf. on Information and Knowledge Management (CIKM'11) - *Poster*, Glasgow, UK, 2011.
25. [Nguyen and Moschitti IJCNLP 2011] Truc Vien T. Nguyen and Alessandro Moschitti. *Joint distant and direct supervision for relation extraction*. In Proceedings of the The 5th International Joint Conference on Natural Language Processing, Chiang Mai, Thailand, November 2011, Association for Computational Linguistics.
26. [Bennaceur et al, 2011] Amel Bennaceur, Richard Johansson, Alessandro Moschitti, Romina Spalazzese, Daniel Sykes, Rachid Saadi, and Valrie Issarny. *Inferring affordances using learning techniques*. In The First Workshop on Trustworthy Eternal Systems via Evolving Software, Data and Knowledge: Eternals'11. To appear in CCIS Springer, 2011.
27. [Severyn and Moschitti, Eternals 2011] Aliaksei Severyn and Alessandro Moschitti. *Large-scale learning with structural kernels for class-imbalanced datasets*. In First Workshop on Trustworthy Eternal Systems via Evolving Software, Data and Knowledge: Eternals'11. To appear in CCIS Springer, 2011.
28. [Severyn and Moschitti, ECML 2011] Aliaksei Severyn and Alessandro Moschitti. *Fast support vector machines for structural kernels*. In ECML-PKDD, 2011, Greece, 2011. **Best Machine Learning Student Paper Award at ECML-PKDD**
29. [Croce et al. EMNLP2011] Danilo Croce, Alessandro Moschitti, and Roberto Basili. *Structured lexical similarity via convolution kernels on dependency trees*. In Proceedings of the 2011 Conference on Empirical Methods in Natural Language Processing, pages 1034–1046, Edinburgh, Scotland, UK., July 2011. Association for Computational Linguistics.
30. [Moschitti et al, EMNLP 2011] Alessandro Moschitti, Jennifer Chu-carroll, Siddharth Patwardhan, James Fan, and Giuseppe Riccardi. *Using syntactic and semantic structural kernels for classifying definition questions in jeopardy!* In Proceedings of the 2011 Conference on Empirical Methods in Natural Language Processing, pages 712–724, Edinburgh, Scotland, UK., July 2011. Association for Computational Linguistics.
31. [Nguyen and Moschitti, ACL-HLT 2011] Truc Vien T. Nguyen and Alessandro Moschitti. *End-to-end relation extraction using distant supervision from external semantic repositories*. In Proceedings of the 49th Annual Meeting of the Association for Computational Linguistics: Human Language Technologies, pages 277–282, Portland, Oregon, USA, June 2011. Association for Computational Linguistics.
32. [Johansson and Moschitti, ACL-HLT 2011] Richard Johansson and Alessandro Moschitti. *Extracting opinion expressions and their polarities – exploration of pipelines and joint models*. In Proceedings of the 49th Annual Meeting of the Association for Computational Linguistics: Human Language Technologies, pages 101–106, Portland, Oregon, USA, June 2011. Association for Computational Linguistics.

33. [Qi et al. 2011] Ju Qi, Richard Johansson, and Alessandro Moschitti. *Towards Using Reranking in Hierarchical Classification*. In Proceeding of Second Pascal Challenge on Large Scale Hierarchical Text Classification in conjunction with the ECML PKDD 11, Athens, Greece, 2011.
34. [Chowdhury et al. BioNLP 2011] Faisal Md. Chowdhury, Alberto Lavelli, and Alessandro Moschitti. *A study on dependency tree kernels for automatic extraction of protein-protein interaction*. In Proceedings of BioNLP 2011 Workshop, pages 124–133, Portland, Oregon, USA, June 2011. Association for Computational Linguistics.
35. [Moschitti, DDR 2011], Alessandro Moschitti, *Analysis of Document Diversity through Sentence-Level Opinion and Relation Extraction*, Proceedings of the workshop: Diversity in Document Retrieval, in conjunction with ECIR 2011 - the 33rd European Conference on Information Retrieval, 2011, Dublin, Ireland

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41. [Vien et al., COLING 2010], Thi Truc Vien Nguyen, Alessandro Moschitti and Giuseppe Riccardi. *Kernel-based Reranking for Entity Extraction*. In proceedings of the 23rd International Conference on Computational Linguistics (COLING), August 2010, Beijing, China.
42. [Quarteroni & Moschitti, LREC 2010], Silvia Quarteroni, Alessandro Moschitti, *A Comprehensive Resource to Evaluate Complex Open Domain Question Answering*. Proceedings of the Seventh conference on International Language Resources and Evaluation (LREC), June 2010, Malta.
43. [Giordani & Moschitti, LREC 2010], Alessandra Giordani and Alessandro Moschitti, *Corpora for Automatically Learning to Map Natural Language Questions into SQL Queries*. Proceedings of the Seventh conference on International Language Resources and Evaluation (LREC), June 2010, Malta.
44. [Johansson & Moschitti, LREC 2010], Richard Johansson and Alessandro Moschitti, *A Flexible Representation of Heterogeneous Annotation Data*. Proceedings of the Seventh conference on International Language Resources and Evaluation (LREC 2010), June 2010, Malta.
45. [Coppola & Moschitti, LREC 2010], Bonaventura Coppola and Alessandro Moschitti,

A General Purpose FrameNet-based Shallow Semantic Parser. Proceedings of the Seventh conference on International Language Resources and Evaluation (LREC 2010), June 2010, Malta.

46. [Moschitti, ISOLA 2010], Alessandro Moschitti, *Introduction to the EternalS Track: Trustworthy Eternal Systems via Evolving Software, Data and Knowledge*. In Proceedings of the 4th International Symposium On Leveraging Applications of Formal Methods, Verification and Validation. Springer Verlag, 2010.
47. [Moschitti, ISOLA 2010], Alessandro Moschitti, *LivingKnowledge: Kernel Methods for Relational Learning and Semantic Modeling*. In Proceedings of the 4th International Symposium On Leveraging Applications of Formal Methods, Verification and Validation. Springer Verlag, 2010

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48. [Basili et al., 2009], Roberto Basili, Daniele Cao, Danilo Croce, Bonaventura Coppola, and Alessandro Moschitti. *Cross-Language Frame Semantics Transfer in Bilingual Corpora*. In Proceedings of the 10th International Conference on Computational Linguistics and Intelligent Text Processing, pages 332–345, Mexico, 2009. Springer. **Best paper award**.
49. [Moschitti, 2009] Alessandro Moschitti. *Syntactic and semantic kernels for short text pair categorization*. In Proceedings of the 12th Conference of the European Chapter of the ACL (EACL 2009), pages 576–584, Athens, Greece, March 2009. Association for Computational Linguistics.
50. [Giannone et al., ws-2009a] Cristina Giannone, Roberto Basili, Chiara Del Vescovo, Paolo Naggari, and Alessandro Moschitti. *Kernel-based relation extraction from investigative data*. In Proceedings of The Third Workshop on Analytics for Noisy Unstructured Text Data, pages 93–100. ACM, 2009. **Best paper award**.
51. [Dinarelli et al., EACL 2009] Marco Dinarelli, Alessandro Moschitti, and Giuseppe Riccardi. *Re-ranking models for spoken language understanding*. In Proceedings of the 12th Conference of the European Chapter of the ACL (EACL 2009), pages 202–210, Athens, Greece, March 2009. Association for Computational Linguistics.
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57. [Pighin and Moschitti, 2009b], Daniele Pighin and Alessandro Moschitti. *Efficient linearization of tree kernel functions*. In Proceedings of the Thirteenth Conference on Computational Natural Language Learning (CoNLL-2009), pages 30–38, Boulder, Colorado, June 2009. Association for Computational Linguistics.
58. [Dinarelli et al., SRS�-ws 2009c], Marco Dinarelli, Silvia Quarteroni, Sara Tonelli, Alessandro Moschitti, and Giuseppe Riccardi. *Annotating spoken dialogs: from speech segments to dialog acts and frame semantics*. In Proceedings of SRS� 2009, the 2nd Workshop on Semantic Representation of Spoken Language, pages 34–41, Athens, Greece, March 2009. Association for Computational Linguistics.
59. [Dinarelli et al., 2009d], Marco Dinarelli, Alessandro Moschitti, and Giuseppe Riccardi. *Concept segmentation and labeling for conversational speech*. In Proceedings of the 10th Annual Conference of the International Speech Communication Association, Brighton, September 2009.
60. [Giannone et al. 2009], Cristina Giannone, Roberto Basili, Chiara Del Vescovo, Paolo Naggari, and Alessandro Moschitti. *Kernel-based Relation Extraction for Crime Investigation*. In Proceedings of The Conference of the Italian Association for Artificial Intelligence, Reggio Emilia, Italy, 2009.
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66. [Moschitti and Quarteroni, ACL 2008], Alessandro Moschitti, Silvia Quarteroni, *Kernels on Linguistic Structures for Answer Extraction*. In proceedings of the 46th Conference of the Association for Computational Linguistics (ACL'08). Short Paper Section. Columbus, OH, USA, June 2008.
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- the Conference on Language Resources and Evaluation, Marrakech, Marocco, 2008.
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 71. [Moschitti and Zanzotto, TextGraphs 2008], Alessandro Moschitti and Fabio Massimo Zanzotto, *Encoding Tree Pair-based Graphs in Learning Algorithms: the Textual Entailment Recognition Case*, Proceedings of TextGraphs-3: Graph-based Algorithms for Natural Language Processing – Workshop held in Coling Coreference. Manchester, England 2008.
 72. [Coppola et al., ICDM 2008], Bonaventura Coppola, Alessandro Moschitti, and Daniele Pighin, *Generalized Framework for Syntax-based Relation Mining*. Accepted as a regular paper at the Eighth IEEE International Conference on Data Mining, Pisa, Italy, Dec. 15-19, 2008, IEEE Computer Society Press.
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 76. [Zanzotto et al., SKD-ws] Zanzotto F., Pennacchiotti M., Moschitti A., *Combining Semi-Unsupervised Acquisition of Corpora and Supervised Learning of Textual Entailment Rules*. In: Semantic Knowledge Discovery, Organization and Use, 2008, Published in proceedings of the workshop "Semantic Knowledge Discovery, Organization and Use" New York, US, 2008.

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