

# Marco Guerini, PhD

---

## Personal Information

### Short Bio

I am a researcher in Computational Linguistics, focusing on persuasive communication, sentiment analysis and social media. I graduated in Philosophy and received my Ph.D. in Information and Communication Technologies in March 2006 from the University of Trento. I'm author of several scientific publications, published in top-level conference proceedings and international journals. My research work includes the participation in EU funded projects and program committee membership at international conferences. My research has been featured on several international magazines and newspapers, such as Wall Street Journal, MIT Technology Review, Harvard Business Review, Wired.

Currently, I'm working at Fondazione Bruno Kessler (FBK-Irst) and previously at Trento-Rise, node of the European Institute of Technology, after several years of research at FBK-Irst. In 2011 my activities have been partially funded by a Google Research Award. In addition, since 2008 I started working as a technology consultant for start-ups and large companies. I also write a Blog about technology and innovation for the main Italian newspaper Corriere della Sera.

### Research Interests

The main topic of my research activity is *computer/human persuasive communication*. Research interests include:

- Artificial Intelligence and Natural Language Processing
- Data-driven approaches to persuasive communication
- Evaluation methodologies for persuasive communication
- Sentiment analysis
- Affective language generation
- Language virality in social networks
- Political communication analysis
- Intelligent User Interfaces
- Cognitive models of persuasion

### Scientific Experience

- (2015-present) Researcher at FBK-Irst.
- (2011-2015) Researcher at Trento-Rise for the project "PerTe, Persuasive Technologies". Tasks: research activity, preparation of project proposals.
- (2010-2011) Scientific coordinator of the CORPS project in collaboration with the *Center for the Evaluation of Language and Communication Technologies* (CELCT) from June 2010 to January 2011.
- (2008-2011) Junior Researcher at FBK-Irst for the FIRB project "Intelligent technologies for cultural visits and mobile education". Tasks: research activity, preparation of project proposals, web portal development.
- (2004-2007) Research Consultant at ITC-Irst for the EU Network of Excellence HUMAINE (human-machine interaction network on emotions). Tasks: research activity, WorkPackage coordination, preparation of project reports and deliverables, workshops organization.
- (2005-2006) Visiting researcher at *Haifa University, Dept. of Human Services*, in

May 2005 and February 2006,

- (2002-2005) Research Consultant at ITC-Irst for the PEACH project (Personal Experience with Active Cultural Heritage). Tasks: mainly research activity.
- (2001-2007) Visiting researcher, on various occasions, at the *Institute of Cognitive Sciences and Technologies* (ISTC – CNR) in Rome.
- (2001-2004) Research Consultant at ITC-Irst for the TICCA project (Cognitive technologies for artificial agents interaction and cooperation). Tasks: mainly research activity.
- (2000-2001) Master thesis at ITC-Irst, in which I focused my research interests on persuasive communication.

### **Seminars Lectures**

- Seminar at *Telefonica-Digital* in Barcelona, February 2014. Title: "Persuasive Natural Language Processing: from web advertising to political speeches and virality in social networks".
- Seminar at *Google Labs* in Zurich, May 2012. Title: "Linguistic style and Content Readability in Social Networks", "Google AdWords, scientific research and the automatic variations of ads text".
- Seminar at *Google Labs* in Zurich, October 2011. Title: "Crowdsourcing Persuasive Message Evaluation with Google AdWords", "Persuasion and Virality in Social Networks".
- Seminar at *MIT media lab* in Boston, October 2011. Title: "Text Virality in Social Networks".
- Seminar at *F5 Hit refresh, Code Camp*, July 2012. Title "Persuasion in language and in political speech".
- Seminar at the *University of Manchester*, September 2006. Title: "Ethical Issues for Persuasive Agents".
- Invited Speaker at "Big Data and Social Mining", *Project Management Institute Conference*, November 2012, Milan. Title "Persuasive Language and Big Data".
- Lecture at the *University of Trento*, April 2013. Title: "Persuasiveness and Audience Reactions in Political Speeches".
- Lecture at the *University of Pisa*, October 2012. Title: "Persuasiveness and Audience Reactions in Political Speeches".
- Lecture at the *University of Trento*, May 2012. Title: "Persuasiveness and Audience Reactions in Political Speeches".
- Lecture at the *University of Amsterdam*, June 2011. Title: "Persuasive Natural Language Processing".

### **Other Scientific Activities**

- PC member for "Content analysis" track at WWW 2014.
- PC member for "Language Resources and Evaluation" track at ACL 2014.
- PC member for "NLP and Creativity" track at ACL 2013.
- PC member for "Social Computing Conference" (SocialCom) in 2012.
- PC member for "Computational Models of Natural Argument" (CMNA) workshops from 2007 to present.
- PC member for "AISB Symposium on Persuasive Technology" in 2008, 2009.
- PC member for "User Models for Motivational Systems: the affective and the rational routes to persuasion" (UM4Motivation) workshops in 2010, 2011, 2012.
- Reviewer for: IEEE Transactions on Affective Computing journal, Applied Artificial Intelligence Journal, Journal of Pragmatics, ACM Transactions on Interactive Intelligent Systems Journal, "Adaptive Hypermedia and Adaptive Web-Based Systems" (AH) 2008, Cicing 2008, "User Modeling, Adaptation, and Personalization" (UMAP) 2009, "Affective Computing & Intelligent Interaction" (ACII) 2009, "International Conference on Computer Creativity"

(ICCC) 2012, "Semantic Relations-II. Enhancing Resources and Applications" (SemRel) 2012, "workshop on Advances in Discourse Analysis" (ADACA) 2012, ACL track on "Evaluation Methods" 2013, ACL track on "NLP for the Web and Social Media" 2014, CLiC 2014, Digital Humanities conference (DH) 2014-2015.

### **Other Professional Experience**

- (2014-2015) Automatic linguistic analysis of internal survey for company's climate at *Autogrill*.
- (2013) Web communication consultant for the start-up *MachineLinking*.
- (2013) Persuasive Technologies consultant for the start-up *NeoCogita*.
- (2012) Web communication consultant for the start-up *Practix*.
- (2012) Tutorial titled "Web Analysis with Google Tools" at *F5 Hit refresh, Code Camp*.
- (2008-2011) Web communication consultant for the editorial project *Resistenza Umana*.
- (2008) 3-month collaboration with the marketing consultancy company *Future Drive*. Focus on viral marketing and WEB 2.0.

### **Education**

- (2006) PhD in "Information and communication Technology" University of Trento, Dept. of Information Engineering and Computer Science, Italy. Dissertation title: "Persuasion Models for Multimodal Message Generation". Advisor: Oliviero Stock. Co-advisor: Massimo Zancanaro.
- (2003) Summer school "Second Americas' school on agents and multiagent systems" (SASAMAS). Acapulco, Mexico.
- (2001) "Laurea" degree *summa cum laude* in Philosophy at the University of Siena. Thesis title: "La persuasione dal punto di vista cognitivo e computazionale" (Persuasion from a cognitive and computational point of view).

### **Media Coverage**

#### **Interviews**

- *Wired Italy* (n. 72, may 2015) - cover story "The virality formula."
- *Marketing Insights Magazine* (July/August 2015) - cover story "The Marketing Science Behind Clickbait."
- Other interviews for: *Gli Stati Generali, Corriere del Trentino, l'Adige*

#### **Works Featured (selection)**

- *MIT- Technology Review* "An Emerging Science of Clickbait"
- *MIT- Technology Review* "The New Science of Online Persuasion"
- *MIT- Technology Review* "How Images Become Viral on Google+"
- *Harvard Business Review* "The Emotional Combinations That Make Stories Go Viral"
- *Wall Street Journal* "How to Create Better Advertisements"
- *New York Magazine* "Here Are the Feels That Make Internet Things Go Viral"
- *The Atlantic* "Science Has Figured Out Why We Share Certain GIFs More Than Others"
- *Adweek* "The Science of Emotions and Virality on Social Media"
- *HubSpot* "The Role of Emotions in Shareable Content"
- *HubSpot* "How to Conduct Research for an Infographic"
- *Rappler* "Study uses Rappler to see relationship between emotions and virality"
- *BoingBoing* "37K sentiment-analysis words associated with emotion scores"
- *Linkiesta* "La scienza delle notizie virali"
- *Corriere della Sera* "Il sublime svelato dalle neuroscienze"

- *La Vanguardia* "Los contenidos alegres son más virales"
- *t3n* "Viralität im Netz"
- *Edutopia* "Technical Writing: In Science, Readability Breeds Virality"

## **Publications**

### **2018**

- Maimone, R.; Guerini, M.; Dragoni, M.; Bailoni, T.; Eccher, C.; "PerKApp: A general purpose persuasion architecture for healthy lifestyles" *Journal of biomedical informatics*, (82) 70-87. 2018 Academic Press
- Guerini, M.; Magnolini, S.; Balaraman, V.; Magnini, Bernardo; Toward zero-shot entity recognition in task-oriented conversational agents *Proceedings of the 19th Annual SIGdial Meeting on Discourse and Dialogue* 317-326 2018
- Araque, Oscar; Gatti, L.; Staiano, Jacopo; Guerini, M.; DepecheMood++: a Bilingual Emotion Lexicon Built Through Simple Yet Powerful Techniques *arXiv preprint arXiv:1810.03660* 2018
- Guerini, M.; Falcone, S; Magnini, B. "A Methodology for Evaluating Interaction Strategies of Task-Oriented Conversational Agents". In *Proceedings of the 2018 EMNLP Workshop SCAI: The 2nd International Workshop on Search-Oriented Conversational AI*, 24-32. 2018
- de Souza, J.; Kozielski, Michael; Mathur, Prashant; Chang, Ernie; Guerini, M.; Negri, Matteo; Turchi, M.; Matusov, Evgeny; Generating E-Commerce Product Titles and Predicting their Quality *Proceedings of the 11th International Conference on Natural Language Generation* 233-243 2018
- Gatti, L.; Ozbal, G.; Guerini, M.; Stock, O.; Strapparava, C. "Computer-supported human creativity and human-supported computer creativity in language" in *Computational Creativity, The Philosophy and Engineering of Autonomously Creative Systems*. 2018.
- Magnini, B.; Balaraman, V.; Dragoni, M.; Guerini, M.; Magnolini, S.; Piccioni, V. "CH1: A Conversational System to Calculate Carbohydrates in a Meal". *International Conference of the Italian Association for Artificial Intelligence* , 110-122. 2018
- Basile, P.; Basile, V.; Croce, D.; Dell'Orletta, F.; Guerini, M. "Introduction to the Second Workshop on Natural Language for Artificial Intelligence". 2018 CEUR-WS

### **2017**

- Mansar, Y.; Gatti, L.; Ferradans, S.; Guerini, M. & Staiano, J. "Fortia-FBK at SemEval-2017 Task 5: Bullish or Bearish? Inferring Sentiment towards Brands from Financial News Headlines". 2017
- Dragoni, M.; Bailoni, T.; Eccher, C.; Guerini, M. & Maimone, R. "A semantic-enabled platform for supporting healthy lifestyles". *Proceedings of the Symposium on Applied Computing*, 315-322. 2017
- Araque, O.; Guerini, M.; Strapparava, C.; Iglesias, C. A. "Neural domain adaptation of sentiment lexicons" *Affective Computing and Intelligent Interaction Workshops and Demos (ACIIW)*, 2017 *Seventh International Conference on* 105-110 2017

### **2016**

- Guerini M. & Strapparava C. "Why do urban legends go viral?". *Information Processing & Management*, 52 (1), 163-172. 2016
- Stock O., Guerini M., & Pianesi F. "Ethical Dilemmas for Adaptive Persuasion Systems". In *Proceedings of the Thirtieth AAAI Conference on Artificial Intelligence*. 2016
- Gatti L., Ozbal G., Guerini M., Stock O. & Strapparava C. "Heady-Lines: A Creative Generator Of Newspaper Headlines". In *Companion Publication of the 21st International Conference on Intelligent User Interfaces (IUI '16)*. 2016
- Dragoni M., Eccher C., Guerini M. & Maimone R. "PerKApp: A context aware motivational system for healthier lifestyles" *T Bailoni, Smart Cities Conference*

(ISC2), IEEE International, 1-4. 2016

## 2015

- Gatti L., Guerini M. & Turchi M. "SentiWords: Deriving a High Precision and High Coverage Lexicon for Sentiment Analysis". IEEE Transactions on Affective Computing. 2015
- Guerini M. & Staiano J. "Deep Feelings: A Massive Cross-Lingual Study on the Relation between Emotions and Virality". In Proceedings of the 24th International Conference on World Wide Web (WWW), 2015.
- Guerini M, Ozbal G. & Strapparava C. "Echoes of Persuasion: The Effect of Euphony in Persuasive Communication". In Proceedings of the 2015 Conference of the North American Chapter of the Association for Computational Linguistics: Human Language Technologies (NAACL), 2015.
- Gatti L., Ozbal G., Guerini M., Stock O. & Strapparava C. "Slogans Are Not Forever: Adapting Linguistic Expressions to the News", In Proceedings of the 24th International Joint Conference on Artificial Intelligence (IJCAI), 2015.
- Guerini M., Pianesi, F. & Stock, O. "Is it morally acceptable for a system to lie to persuade me?" In Proceedings of AAAI Workshop on AI and Ethics, 2015.

## 2014

- Staiano J. & Guerini M. "DepecheMood: a Lexicon for Emotion Analysis from Crowd Annotated News". In Proceedings of the 52th Annual Meeting of the Association for Computational Linguistics (ACL), 2014.
- Guerini M. & Strapparava C. "Credible or Incredible? Dissecting Urban Legends". In Proceedings of CICLing, 441-453, 2014.
- Gatti L., Guerini M., Stock O. & Strapparava C. "Mocking ads through mobile web services". Computational Intelligence, 2014.
- Gatti L., Guerini M., Stock O. & Strapparava C. "Sentiment Variations in Text for Persuasion Technology". In Proceedings of Persuasive Technologies, 2014.
- Gatti L., Guerini M., Stock O. & Strapparava C. "SUBVERTISER: mocking ads through mobile phones". In Proceedings of IUI, 2014. ACM, New York, USA, 41-44.

## 2013

- Guerini M., Gatti L. & Turchi M. "Sentiment Analysis: How to Derive Prior Polarities from SentiWordNet". In Proceedings of EMNLP, 2013.
- Guerini M., Staiano J. & Albanese D. "Exploring Image Virality in Google Plus". In Proceedings of SocialCom, 2013.
- Chowdhury F. M., Guerini M., Tonelli S. & Lavelli A. "FBK: Sentiment Analysis in Twitter with Tweetsted". In Proceedings of SemEval-2013.
- Ginevri W. & Guerini M. "Big Data: New Tools for Mitigating Project Complexity". In Proceedings of PMI Global Congress 2013.

## 2012

- Guerini M., Strapparava C. & Stock O. "Ecological Evaluation of Persuasive Messages Using Google AdWords". In Proceedings of the 50th Annual Meeting of the Association for Computational Linguistics (ACL), 2012.
- Guerini M., Pepe A. & Lepri B. "Do Linguistic Style and Readability of Scientific Abstracts Affect their Virality?". In Proceedings of the Sixth International AAAI Conference on Weblogs and Social Media (ICWSM), 2012.
- Guerini M., Strapparava C. & Stock O. "Audience Reactions for Information Extraction About Persuasive Language in Political Communication". In M. Maybury (ed.) Multimedia Information Extraction: Advances in Video, Audio, and Imagery Analysis for Search, Data Mining, Surveillance, and Authoring, 289-304, John Wiley & Sons, Inc. 2012.
- Ozbal G., Strapparava C. & Guerini M. "Brand Pitt: A Corpus to Explore the Art of Naming". In Proceedings of LREC2012, Istanbul, 2012.
- Gatti L. & Guerini M. "Assessing Sentiment Strength in Words Prior Polarities".

In Proceedings of the International Conference on Computational Linguistics (Coling), 2012.

- Gatti L., Guerini M., Callaway C., Stock O. & Strapparava C. "Creatively Subverting Messages in Posters". In Proceedings of the International Conference on Computational Creativity (ICCC), 2012.
- Stock O. & Guerini M. "Investigating Ethical Issues for Persuasive Systems". *The Goals of Cognition*. 497-522, 2012.

#### **2011**

- Guerini M., Stock O., Zancanaro M., O'Keefe D.J., Mazzotta I., de Rosis F., Poggi I., Lim M. Y. & Aylett R. "Approaches to Verbal Persuasion in Intelligent User Interfaces". In P. Petta, R. Cowie and C. Pelachaud (eds.) *The HUMAINE Handbook on Emotion-Oriented Systems Technologies*. Springer, 2011.
- Guerini M. & Stock O. "Intelligent Persuasive Technologies: Prospects for Tourism". *Journal of Information Technology and Tourism*, 12(2): 107-123, 2011.
- Guerini M. & Strapparava C. "Persuasion and Social Contagion". in Proceedings of the SocialCom Workshop on Social Behavioral Analysis and Behavioral Change, Boston, 2011.
- Strapparava C., Guerini M. & Ozbal G. "Persuasive Language and Virality in Social Networks". in Proceedings of Affective Computing and Intelligent Interaction conference (ACII), 2011. **Nominee for Best Paper Award**.
- Guerini M., Strapparava C. & Ozbal G. "Exploring Text Virality in Social Networks". In Proceedings of the Fifth International AAI Conference on Weblogs and Social Media (ICWSM), 2011.
- Guerini M., Strapparava C. & Stock O. "Slanting Existing Text with Valentino". In Proceedings of IUI2011, Palo Alto, CA, 2011.

#### **2010**

- Guerini M., Strapparava C. & Stock O. "Evaluation Metrics for Persuasive NLP with Google AdWords". In Proceedings of LREC2010, Malta, 2010.
- Strapparava C., Guerini M. & Stock O. "Predicting Persuasiveness in Political Discourses". In Proceedings of LREC2010, Malta, May 2010.

#### **2008**

- Guerini M., Strapparava C. & Stock O. "CORPS: A Corpus of Tagged Political Speeches for Persuasive Communication Processing". *Journal of Information Technology & Politics*, 5(1): 19-32, Routledge, 2008.
- Guerini M., Strapparava C. & Stock O. "Trusting Politicians Words (for Persuasive NLP)". in *Computational Linguistics and Intelligent Text Processing*, 4919: 263-274. Springer Berlin, Heidelberg, 2008.
- Guerini M., Strapparava C. & Stock O. "Resources for Persuasion" in Proceedings of LREC2008, Marrakech, Morocco, May 2008.
- Guerini M., Strapparava C. & Stock O. "Valentino: A tool for Valence Shifting of Natural Language Texts" in Proceedings of LREC2008, Marrakech, Morocco, May 2008.

#### **2007**

- Guerini M., Stock O. & Zancanaro M. "A Taxonomy of Strategies for Multimodal Persuasive Message Generation". *Applied Artificial Intelligence Journal*, 21(2): 99-136, 2007.
- Castelfranchi C. & Guerini M. "Is it a Promise or a Threat?". *Pragmatics & Cognition Journal*, 15(2): 277-311, 2007.
- Castelfranchi C. & Guerini M. "Pragmatics and Social Interaction of Conditional Influencing Promises and Threats" in Proceedings of the IJCAI Workshop on Computational Models of Natural Argument, Hyderabad, India, January 2007.

#### **2006**

- Stock O., Guerini M. & Zancanaro, M. "Interface Design and Persuasive

Intelligent User Interfaces". In S. Bagnara and G. Crampton Smith (eds.) The Foundations of Interaction Design, Lawrence Erlbaum Publishing Co., Hillsdale, 2006.

- Guerini M. "Persuasion Models for Multimodal Message Generation", Ph.D. Thesis. Advisor Stock O. and Zancanaro M., University of Trento, March 2006.
- Guerini M. & Castelfranchi C. "Promises and Threats in Persuasion" in Proceedings of the ECAI Workshop on Computational Models of Natural Argument, Riva del Garda, August 2006.

#### **2005 and before**

- Guerini M. & Stock O. "Toward ethical persuasive agents" in Proceedings of the IJCAI Workshop on Computational Models of Natural Argument, Edimburgh, July 2005.
- Guerini M., Stock O. & Zancanaro M. "Computational Modelling of Persuasive Communication" in Proceedings of the 9th International Pragmatics Conference, Riva del Garda, Italy, July 2005.
- Guerini M., Stock O. & Zancanaro M. "Persuasive Strategies and Rhetorical Relation Selection" in Proceedings of the ECAI Workshop on Computational Models of Natural Argument, Spain, August 2004.
- Guerini M., Stock O. & Zancanaro M. "Persuasion Models for Intelligent Interfaces", in Proceedings of the IJCAI Workshop on Computational Models of Natural Argument, Mexico, August 2003.

#### **Other Publications:**

- Guerini M. & Stock O. "Persuasive Processes and Human-Computer Intelligent Interfaces". Sistemi intelligenti 3/2012, pp. 521-540.
- Guerini M. "When Online Advertising Meets Science". Economic & Commercial Newsletter of the Consulate General of Italy in San Francisco, Issue 4, 2012.
- Guerini M. "Tecnologie Persuasive". Persone e Conoscenze, 65: 59-63, January 2011.
- Castelfranchi C. & Guerini M. "Is it a Promise or a Threat?", ITC-Irst, Technical report T06-01-01, January 2006, 35 pp.

## **Resources and Software**

- **Sentiwords** is a high-precision lexicon for sentiment analysis containing roughly 155.000 words associated with a sentiment score included between -1 and 1. Words in this resource are in the form lemma#PoS and are aligned with WordNet lists (that include adjectives, nouns, verbs and adverbs). Sentiment scores represent state-of-the-art computation of words' prior polarities (i.e. polarity for non-disambiguated words). [Download Page](#)
- **DepecheMood** is a high-precision lexicon of roughly 37.000 terms annotated with emotion scores. Words in this resource are in the form lemma#PoS and are aligned with WordNet lists (that include adjectives, nouns, verbs and adverbs). Emotions scores represent state-of-the-art computation of words' affective score. [Download Page](#) – [Online Demo](#)
- **CORPS** is a corpus of political speeches tagged with specific audience reactions, such as APPLAUSE or LAUGHTER for the analysis of persuasive language. At present, there are more than 3600 speeches in the corpus, about 7.9 millions words, and more than 67 thousand tags about audience reaction. [Download Page](#)
- **Persuasive Sentences Pairs** Several thousands of textual pairs, consisting of

a persuasive sentence and a non-persuasive counterpart (in the realm of advertisement and politics). Each pair is controlled for topic, author, sentence length. [Download Page](#)

**Spoken  
Languages**

- Italian (native language)
- English (fluent)
- French (basic)

**Computer  
Science  
Background:**

- Programming Languages: R-statistics, C++, LISP.
- Good knowledge of Google Analytics and Google AdWords tools.
- Good knowledge of image editing software (Photoshop and similar).
- Computer skills: Microsoft Office, Windows and Unix operative systems.

**Interests:**

- Sports: Alpinism, free-climbing, scuba diving, kick box, hiking.
- Manipulate graphic images (2D)
- Theater and reading
- Travelling abroad.