

Nicola Guarino

Short CV, September 2009

Born: 6 aprile 1954
Place: Messina, Italy

Degree: **Electronic Engineering**, University of Padova, 8 November 1978.

Current position: **Senior researcher** at the Institute for Cognitive Sciences and Technologies of National Research Council (ISTC-CNR, with headquarters in Roma and separate locations in Trento and in Padova)
Scientific director of the *ISTC-CNR Laboratory for Applied Ontology* in Trento.

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Brief Bio:

Nicola Guarino graduated in Electronic Engineering at the University of Padua in 1978, with a thesis on biomedical engineering. In 1979–1984 he was in charge of the data acquisition and monitoring system of a nuclear fusion experiment at the Institute of Ionized Gases (IGI-CNR) in Padua. He then moved to the area of knowledge representation, joining the CNR Institute of Systems Theory and Biomedical Engineering (LADSEB-CNR, now ISIB-CNR) to work initially on medical expert systems. He moved to ISTC-CNR in 2003, to found the new Laboratory for Applied Ontology in Trent.

He has been active in the ontology field since 1991, developing a strongly interdisciplinary approach that combines together Computer Science, Philosophy, and Linguistics, and relies on Logic as a unifying paradigm. As early as 1993 he organized in Padua the first *International Workshop on Formal Ontology in Conceptual Analysis and Knowledge Representation*, and since then he has gained a well-known international leadership concerning the ontological foundations of conceptual modeling and knowledge engineering, and more in general the role of semantic technologies in information systems, in multi-agent systems, and in natural language processing. His impact is testified by the successful series of conferences on Formal Ontology in Information Systems (FOIS 1998-2008), a long list of widely cited research papers, a number of special issues on international journals, and a series of keynote talks and invited tutorials in major conferences involving different communities. Among the best known results of his lab, we may mention the OntoClean methodology (www.loa-cnr.it/Ontoclean) and the DOLCE foundational ontology (www.loa-cnr.it/DOLCE).

He participated to various ontology-related projects, such as the European project WonderWeb (development of foundational ontologies for the Semantic Web), a project on Modeling Trust and Security Relationships in Organizations funded by the Province of Trento (MOSTRO), a large Italian project on knowledge-oriented technologies for enterprise integration (TOCAI), and an initiative for an open ontology-based resource for the Italian lexicon (Senso Comune). He is also co-director (with Laure Vieu) of ILIKS – Interdisciplinary Laboratory for Interacting Knowledge Systems, a French-Italian joint initiative with more than 70 researchers

involved (www.loa-cnr.it/iliks). Recently he got involved in various e-government initiatives (such as the laboratory for e-government LEGO) aiming at developing a reference ontology for the Italian Public Administration focusing on the interactions between services and organizations. Strong cooperation relationships exist with various national and international research institutes.

He is editor-in-chief (with Mark Musen, Stanford University) of the *Applied Ontology* journal (IOS Press); associate editor of *Journal of Data Semantics* and *Frontiers of Computer Science in China*, editor of the book series *Frontiers in AI and Applications* of IOS Press, and general chair of the conference series on *Formal Ontology in Information Systems* (FOIS). He is also president of the newly established *International Association for Ontology and its Applications* (IAOA, www.iaoa.org), and member of ACM, AAAI, and AI*IA.

Awards

- **Best paper** award (with Giancarlo Guizzardi, Gerd Wagner, and Marten van Sinderen at CaiSE 2004, 16th *International Conference on Advanced Information Systems Engineering*, Riga, Latvia, June 7-11 2004)
- **Thomson-ISI recognition of an “Emerging Research Front”** in Computer Science¹ CACM work on OntoClean with Chris Welty among the most cited papers in June 2004)

Main research projects

1. **EC-EUREKA E!2235 – IKF (Information and Knowledge Fusion)** (2000-2003)
2. **EC-FP5/IST Network of Excellence “OntoWeb”**. Ontology-based information Exchange for knolletje management and electronic commerce (2001-2004)
3. **EC-FP5/IST “WonderWeb”** – Ontology Infrastructure for the Semantic Web (2002-2004)
4. **EC-FP6/IST “MeToKIS – Methodology and tools infrastructure for the creation of knowledge units”** (2004-2005)
5. Autonomous Province of Trento – **TICCA**. Cognitive technologies for interaction and cooperation among agents (2001-2004)
6. Autonomous Province of Trento – **MOSTRO**. Modelling Security and Trust Relationships within Organizations (2005-2007)
7. **EC-Marie-Curie Intra-European Fellowship (FP6) – FOFIS – Formal Ontological Foundations for Informations Systems** (2005)
8. Ministry of Research and Univeristy – **TOCAI – Tecnologie Orientate alla Conoscenza per Aggregazioni di Imprese su Internet** (2006-2009)
9. Piedmont Region – **ICT4LAW – ICT Converging on Law: Next Generation Services for Citizens, Enterprises, Public Administration and Policymakers** (2009-2011)

¹ <http://esi-topics.com/erf/2004/june04-ChristopherWelty.html>

Selected Publications

- Guarino N. (Ed.). *Formal Ontology in Information Systems*. IOS Press, Amsterdam, 1998.
- Guarino, N. and Poli, R. (guest eds.), *International Journal of Human and Machines Studies (special issue on The Role of Formal Ontology in the Information Technology)*. **43(5/6)**, 1995.
- Guarino, N., Pribbenow, S., and Vieu, L. (guest eds.), *Data and Knowledge Engineering (special issue on Modelling Parts and Wholes)*, **30(3)**, 1996.
- Guarino, N. (guest ed.), *Data and Knowledge Engineering (special issue on Formal Ontology and Conceptual Modelling)*, **31(2)**, 1999
- Guarino N., 1992. Concepts, Attributes, and Arbitrary Relations: Some Linguistic and Ontological Criteria for Structuring Knowledge Bases, *Data and Knowledge Engineering*, 8(1992), pp. 249-261.
- Guarino N., 1994. The Ontological Level. In R. Casati, B. Smith and G. White (eds.), *Philosophy and the Cognitive Sciences*, Vienna, Hölder-Pichler-Tempsky 1994, pp. 443-456
- Guarino, N. and Giaretta, P. 1995. Ontologies and Knowledge Bases: Towards a Terminological Clarification. In N. Mars (ed.) *Towards Very Large Knowledge Bases: Knowledge Building and Knowledge Sharing 1995*. IOS Press, Amsterdam: 25-32.
- Artale, A., Franconi, E., Guarino, N., and Pazzi, L. 1996. Part-Whole Relations in Object-Centered Systems: an Overview. *Data and Knowledge Engineering*, **20(3)**: 347-383.
- Borgo, S., Guarino, N., and Masolo, C. 1996. A Pointless Theory of Space based on Strong Connection and Congruence. In *Proceedings of Principles of Knowledge Representation and Reasoning (KR96)*. Boston, MA, Morgan Kaufmann: 220-229.
- Guarino N. Semantic matching: formal ontological distinctions for information organization, extraction, and integration. In *Information Extraction: A Multidisciplinary Approach to an Emerging Information Technology*. Lecture Notes in Artificial Intelligence 1299, M.T. Pazienza (Ed.) Springer Verlag, Berlin, 1997, p.139-170.
- Guarino N. Understanding, building, and using ontologies. *International Journal of Human and Computer Studies* **46**: 293-310, 1997.
- Guarino, N. 1997. Ontologia Formale, Modellazione Concettuale e Ingegneria della Conoscenza. *Paradigmi*, **15(44)**: 285-299.
- Guarino N. Some ontological principles for designing upper level lexical resources. In *Language Resources and Evaluation*, A. Rubio, N. Gallardo, R. Castro, A. Tejada (Eds.), European Language Resources Association (ELRA), Granada, Spain, 1998, vol.1, p.527-534.
- Guarino N. Formal ontology in information systems. In *Formal Ontology in Information Systems*, N. Guarino (Ed.), IOS Press, Amsterdam, 1998, p.3-15.
- Guarino, N. The Role of Identity Conditions in Ontology Design. In C. Freksa and D. M. Mark (eds.), *Spatial Information Theory - Cognitive and Computational Foundations of Geographic Information Science*. Proceedings of International Conference COSIT '99. Springer Verlag, Berlin, 1999, p. 221-234.
- Guarino, N., Masolo, C., and Vetere, G. OntoSeek: Content-Based Access to the Web. *IEEE Intelligent Systems*, **14(3)**, 1999, p. 70-80.
- Guarino, N. 1999. Panini al prosciutto e altri trabocchetti ontologici. Commenti all'articolo di Casati e Varzi "I trabocchetti della rappresentazione spaziale". *Sistemi Intelligenti*, **11(1)**: 42-53.
- Guarino N., Welty, C. Identity, Unity, and Individuation: Towards a Formal Toolkit for Ontological Analysis. In W. Horn, ed., *Proceedings of ECAI-2000: The European Conference on Artificial Intelligence*. IOS Press, Amsterdam. August, 2000.
- Guarino N., Welty, C. Ontological analysis of taxonomic relationships. In *Proceedings of 19th International Conference on Conceptual Modeling (ER2000)*. October 9-12, 2000, Salt Lake City, USA

- Gangemi, A., Guarino, N., and Oltramari, A. 2001. Conceptual Analysis of Lexical Taxonomies: The Case of WordNet Top-Level. In C. Welty and S. Barry (eds.), *Formal Ontology in Information Systems. Proceedings of FOIS2001*. ACM Press: 285-296.
- Guarino, N. 2001. Review of John Sowa's "Knowledge Representation: Logical, Philosophical, and Computational Foundations". *AI Magazine*, **22**(3): 123-125.
- Schulten, E., Akkermans, H., Guarino, N., and Doerr, M. 2001. The eCommerce Product Classification Challenge. *IEEE Intelligent Systems*(August): 86-89.
- Welty, C. and Guarino, N. 2001. Supporting Ontological Analysis of Taxonomic Relationships. *Data and Knowledge Engineering*, **39**(1): 51-74.
- Guarino, N. and Welty, C. 2001. Evaluating Ontological Decisions with OntoClean. *Communications of the ACM* **45**(2): 61-65
- Guarino, N. and Welty, C. 2002. Identity and subsumption. In R. Green, C. Bean and S. Myaeng (eds.), *The Semantics of Relationships: an Interdisciplinary Perspective*. Kluwer:111-126.
- Gangemi, A., Guarino, N., Masolo, C., Oltramari, A., & Schneider, L. 2002. Sweetening Ontologies with DOLCE. In A. Gomez Perez & V. R. Benjamins (Eds.), *Knowledge Engineering and Knowledge Management. Ontologies and the Semantic Web. Proceedings of 13th International Conference, EKAW 2002*. Berlin: Springer Verlag:166-181.
- Gangemi, A., Guarino, N., Masolo, C., and Oltramari, A. 2003. Sweetening Wordnet with DOLCE. *AI Magazine*, **24**(3): 13-24
- Guarino, N., and Welty, C. 2004. An overview of OntoClean. In R. Studer and S. Staab (eds.), *Handbook of Ontologies in Information Systems*, Springer Verlag: 151-172.
- Guizzardi, G., Wagner, G., Guarino, N., van Sinderen, M. An Ontologically Well-Founded Profile for UML Conceptual Models. In A. Persson and J. Stima (eds.), *Proc. of 16th Conf. on Advanced Information Systems Engineering (CAISE 2004)*. LNCS 3084, pp. 112-126.
- Masolo, C., Vieu, L., Bottazzi, E., Catenacci, C., Ferrario, R., Gangemi, A., Guarino, N. 2004. Social Roles and their Descriptions. *Proc. of 9th Int. Conf. On Principles of Knowledge Representation and Reasoning (KR2004)*, Whistler, Canada, June 2004, June 2004.
- Guarino, N., *Toward a Formal Evaluation of Ontology Quality*. *IEEE intelligent Systems*, 2004. **19**(4): 78-79.
- Guarino, N., and Musen, M. Focusing on Content. *Applied Ontology*, **1** (2005):1-6.
- Guarino, N. and Guizzardi, G. 2006. In Defense of Ontological Foundations for Conceptual Modeling. *Scandinavian Journal of Information Systems*, **18**(1): 115-126.
- Calvanese, D. and Guarino, N. 2006. Ontologies and description logics. *Intelligenza Artificiale*, **3**(1/2): 19-25.
- Artale, A., Guarino, N., & Keet, M. C. 2008. Formalizing Temporal Constraints on Part-Whole relations. In G. Brewka, J. Lang (eds.): *KR 2008: Eleventh International Conference on Principles of Knowledge Representation and Reasoning*, AAAI Press.
- Ferrario R., Guarino N. 2008. A New Ontological Perspective for Social Services. In Corradini, F., and Polzonetti, A. (eds.), *MeTTeG08, Proceedings of the 2nd International Conference on Methodologies, Technologies and Tools Enabling e-Government*, Halley, pp.41-51.
- Ferrario R., Guarino N. 2009. Towards an Ontological Foundation for Services Science. In Domingue, J., Fensel, D., and Traverso, P.: *First Future Internet Symposium, Vienna, Austria, September 28-30, 2008: Revised Selected Papers*. Springer Verlag, Lecture Notes in Computer Science, Vol. 5468.
- Guarino, N., Oberle, D., and Staab, S. 2009. What is an Ontology? In S. Staab and R. Studer (eds.), *Handbook on Ontologies*, Second Edition. International handbooks on information systems. Springer Verlag: 1-17.
- Guarino, N. and Welty, C. 2009. An introduction to Ontoclean (revised version). In S. Staab and R. Studer (eds.), *Handbook on Ontologies*, Second Edition. International handbooks on information systems. Springer Verlag: 201-221.
- Guarino, N. 2009. The Ontological Level: Revisiting 30 Years of Knowledge Representation. In Alex Borgida, Vinay Chaudhri, Paolo Giorgini, Eric Yu (eds.), *Conceptual Modelling: Foundations and Applications. Essays in Honor of John Mylopoulos*, Springer Verlag 2009, pp. 52-67.

Oltramari, A., Gangemi A., Guarino N., Masolo C. 2009. Restructuring WordNet's Top-Level: the OntoClean Approach. In C.-R. Huang, N. Calzolari, A. Gangemi, A. Lenci, A. Oltramari, L. Prevot (eds.), *Ontologies and Lexical Resources for Natural Language Processing*, Cambridge University Press 2009 (in press).

Bibliometric data (according to Publish&Perish):

h-index: **33**

g-index: **91**

total citations: **8465**

Position 1310 according to the Citeseer's classification of most cited computer science authors