

# Paolo Besana

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## Research Interests

Open distributed systems, distributed coordination-based systems, workflows, knowledge engineering, semantic interoperability

## Work experience

### Academic experience

#### Post-doc position for the Safe and Sound project<sup>1</sup>

July 2008 - present

- ▷ analysed the case studies (in particular the diagnostic process followed for suspected breast cancer) and modelled them as a distributed process; defined the role and scope of a distributed system based on choreographies of independent peers in medical procedures.
- ▷ integrated the current decision support system and its distributed execution engine (based on the OpenKnowledge project) in a proof-of-concept prototype.
- ▷ contributed to the final report on the distributed model, published one journal paper and two workshop papers

#### Researcher for the OpenKnowledge project<sup>2</sup>

October 2006 - July 2008

- ▷ refined the formalisation of the semantics for the language used to represent interaction models, formalised an extension of the language for representing ontological types of parameters passed in messages, designed various parts of the software architecture
- ▷ lead the integration of separate components into the framework (I was particularly involved in the integration of the language interpreter, of the ontology matcher and of the trust components), coded several portions of the system core
- ▷ formalised the evaluation method for ontology matching and for the trust component, laid out the test framework, contributed to the development of various interaction models and components for the testbed scenarios (bioinformatics and emergency response)
- ▷ lead or participated in the writing of several deliverables, published one book chapter, two conference papers and one poster.

## Teaching

- ▷ *Informatics 2D - Introduction to Artificial Intelligence (2nd year undergraduate course)*  
January-March 2006 and 2007: Teaching Assistant and Tutor
- ▷ *Informatics 1A - Computation and Logic (1st year undergraduate course)*  
September-December 2006 and 2007: Teaching Assistant, Tutor and Demonstrator
- ▷ *Informatics 2A - Processing Natural and Artificial Languages (2nd year undergraduate course)*  
September-December 2005: Tutor and Demonstrator
- ▷ *Computational Neuroscience of Vision (Msc course)*  
January 2007: Demonstrator for Python language

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<sup>1</sup>[www.clinicalfutures.org.uk](http://www.clinicalfutures.org.uk)

<sup>2</sup>[www.openk.org](http://www.openk.org)

## Industrial experience

### Web application developer at Kaptus, Milano (Italy)

March 2001 to September 2004

- ▷ Developed a web application for analysis and management of building sites. This product is currently used in the building sites of the Alta Velocità (high speed railway track project) to determine the work progress
- ▷ Developed an object-oriented PHP library used for managing dynamic web pages
- ▷ Participated in the development of industrial applications for quality control based on imaging

### Software engineer at GMM, Seriate (Bergamo, Italy)

October 2000 to July 2004

- ▷ Developed a digital system for radiological diagnostic. The application includes acquisition, recording and processing of radiological images for medical use

### Application engineer at Advanced Technologies, Trezzano S/N (Milano, Italy)

February 1999 to October 2000

- ▷ Oversaw the technical assistance, specialising in the Matrox Imaging Library. Developed imaging applications and internal libraries

## Education

### University of Edinburgh

September 2004 - April 2009

PhD in Artificial Intelligence at the University of Edinburgh. Thesis title: *Statistical modelling of the content of exchanged messages in protocol-based peer-to-peer interactions*. First supervisor: Prof. Dave Robertson, second supervisor: Dr Michael Rovatsos

### Politecnico di Milano

September 1993 - July 1999

Laurea in Telecommunication Engineering with final mark: 83/100. Thesis title: *A search engine based on semantic networks*. Supervisor: Prof. Marco Colombetti

### University College Dublin

September 1996-June 1997

ERASMUS exchange in the department of Electronic Engineering

### Liceo Scientifico Marconi, Milano

September 1988 - July 1993

Final high school exam (Maturità) mark: 60/60

## Programme Committee member

- ▷ Workshop on Matching and Meaning 2009 (WMM2009) <sup>3</sup>
- ▷ Third International Workshop on Ontology Matching (OM-2008)<sup>4</sup>
- ▷ Fourth International Workshop on Ontology Matching (OM-2009)
- ▷ First International Workshop on Living Web: Making Web Diversity a true asset

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<sup>3</sup><http://dream.inf.ed.ac.uk/events/wmm-2009/>

<sup>4</sup><http://om2008.ontologymatching.org/>

## Publications

### Journals

- ▷ P. Besana, V. Patkar, A. Barker, D. Robertson, D. Glasspool. Sharing Choreographies in OpenKnowledge: A Novel Approach to Interoperability, to appear in *Journal of Software*, Special Issue on Semantic Extensions to Middleware, August 2009
- ▷ D. Robertson, C. Walton, A. Barker, P. Besana, Y. Chen-Burger, F. Hassan, D. Lambert, G. Li, J. McGinnis, N. Osman, A. Bundy, F. McNeill, F. van Harmelen, C. Sierra, F. Giunchiglia. Models of Interaction as a Grounding for Peer to Peer Knowledge Sharing. In E. Chang, T. Dillon, R. Meersman and K. Sycara editors, *Advances in Web Semantics*, vol 1, LNCS-IFIP
- ▷ P. Besana and D. Robertson. Probabilistic Dialogue Models for Dynamic Ontology Mapping. In *Uncertainty Reasoning for the Semantic Web I (URSW 2005-2007, Revised Selected and Invited Papers)*, Springer, Volume 5327/2008

### Conferences

- ▷ G. Trecarichi, L. Vaccari, V. Rizzi, M. Marchesi, P. Besana. OpenKnowledge at work: exploring centralized and decentralized information gathering in emergency contexts, *ISCRAM'09*, Goteborg, Sweden
- ▷ F. Giunchiglia, F. McNeill, M. Yatskevich, J. Pane, P. Besana and P. Shvaiko. Approximate structure-preserving semantic matching, *ODBASE'08*, Monterrey, Mexico, 2008
- ▷ P. Besana and D. Robertson. How Service Choreography Statistics Reduce the Ontology Mapping Problem, *In Proceedings of ISWC 2007*, Busan, Korea, 2007

### Chapters

- ▷ F. McNeill, P. Besana, J. Pane, F. Giunchiglia. Service integration through structure preserving semantic matching. *Cases on Semantic Interoperability for Information Systems Integration: Practices and Applications*. Edited by Yannis Kalfoglou.

### Workshops

- ▷ A. Barker, P. Besana, D. Robertson, J. Weissman. The Benefits Of Service Choreography For Data-Intensive Computing, *to appear in CLADE'09 Workshop, HPDC'09*, Berlin, Germany, 2009
- ▷ P. Besana, V. Patkar, D. Glasspool, D. Robertson. Distributed Workflows: the OpenKnowledge Experience. In *SEMELS'08 Workshop*, Monterrey, Mexico, 2008
- ▷ P. Besana and D. Robertson. Probabilistic Dialogue Models for Dynamic Ontology Mapping. In *Proceedings of the ISWC 2006 Workshop on Uncertainty Reasoning for the Semantic Web*, Athens, USA, 2006
- ▷ P. Besana, D. Robertson, and M. Rovatsos. Exploiting interaction contexts in P2P ontology mapping. In *Proceedings of the Second International Workshop on Peer-to-Peer Knowledge Management (P2PKM 2005)*, San Diego, CA, 2005

### Posters and short papers

- ▷ F. Giunchiglia, M. Yatskevich, F. McNeill, P. Shvaiko, J. Pane and P. Besana. Approximate structure preserving semantic matching, *ECAI'08*
- ▷ P. Besana. A Framework for Combining Ontology and Schema Matchers with Dempster-Shafer. In *Ontology Matching workshop*, ISWC'06
- ▷ P. Besana and D. Robertson. Contexts in Dynamic Ontology Mapping in *Contexts and Ontologies workshop*, AAAI'05