

CURRICULUM VITAE

of Barbara Vantaggi

Current Address: Department of Scienze di Base e Applicate per l'Ingegneria - University La Sapienza di Roma, Via Scarpa 16, 00161 Roma (Italy)

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Academic position:

Associate Professor of Probability and Mathematical Statistics at the University La Sapienza, Roma (from 30/12/2010)

Habilitation as full professor in 'Mathematical models for economics insurance and finance' 13/D4

Education:

P.h.D. Metodi Statistici e Matematici per la Ricerca Economica e Sociale XII ciclo, at the Department of Scienze Statistiche of University of Perugia

Degree: Mathematics (15/03/1996) at the University of Perugia (110/110 cum lode)

Research interest:

Applied mathematics, Decision theory, Finitely additive probabilities, Envelopes of probabilities and imprecise probability, Graphical models, Statistics.

Editorial Activity:

Member of the Editorial Board of the journal International Journal of Approximate Reasoning (since 2016).

Co-Editor of the book 'Soft Methods for Data Science', Advances in Intelligent Systems and Computing, Springer Verlag (2016).

Co-Guest editor of volume of March 2008 of the journal International Journal of Approximate Reasoning.

Seminars and invited talks:

Local coherence of a partial assessment 25/03/1998 at the Faculty of Economics of the Prague University;
Ordinal Relations Representable by Lower and Upper Probabilities 10/05/1998 at the Faculty of Economics of the Prague University;

Properties of a stronger conditional independence notion 27/10/1999 Workshop on Conditional Independence Structures and Graphical Models at The Fields Institute for Research in Mathematics, Toronto (Canada);

Conditional independence and graphical models 09/03/2000 at the Faculty of Economics of the Prague University;

Probabilistic Reasoning (Laboratory) at the International Summer School on REASONPARK, Foligno (Perugia) 2002;

Graphical representation of asymmetric graphoid structures 13/03/2003 at the Faculty of Economics of the University of Pavia;

The role of zero probabilities to deal with logical dependencies in graphical models 25/05/2004 ISBA Conference, Viña del Mar (Cile);

Computational challenges in imprecise probabilities 23/07/2005 at the International Symposium on Imprecise Probabilities and their Applications (Pittsburgh, USA);

Fuzzy relations in a coherent conditional probability setting 4/7/2006 at the 7th International Conference on Information and Management Sciences, Chengdu (Cina);

Fuzzy relations and coherent conditional probability 1/06/2007 at the Faculty of Economics of the University Co Foscari of Venezia;

Conditional possibility: from numerical to qualitative approach, 28th Linz Seminar on Fuzzy Set Theory, Linz (Austria), 2007;

Generalized Bayesian inference in a fuzzy context, at Conference ERCIM 2009 Cyprus (session Fuzzy Statistical Analysis);

From qualitative probability to qualitative possibility, at Conference ERCIM 2010 London (session Hybrid models in uncertainty and decision);
 Coherence for Uncertainty Measures given through a Basic Assignments ruled by General Operations, at the Conference IPMU 2012 Catania (session New Trends in De Finetti's approach);
 Identifiability of hierarchical models with one hidden binary variable, at the Conference SIS 2012 Roma (session Graphical models: some recent advances);
 Coherence for statistical matching with misclassification ERCIM 2013 London (session Statistical methods for non-precise data);
 Bayesian inferential models with multiple priors: lower and upper envelopes, at the Conference in honor of Prof. Patrizia Berti, Modena, 2015;
 Bayesian inference starting from a 2-monotone prior capacity, at the 3rd Meeting on Statistics Athens, 2015;
 de Finetti coherence and beyond, tutorial at the Conference ISIPTA 2015, Pescara, 2015.

Founding:

Partial knowledge and probabilistic methods in intelligent systems, Univ. La Sapienza - Found Faculty (Year 2000)
 Probabilistic models for handling uncertainty, Young research grant, Univ. La Sapienza (Year 2002)
 Conditional probability and its role in decision processes, Univ. La Sapienza - Found AST (Year 2006)
 Conditional uncertainty measures and their application on decisional processes, Univ. La Sapienza - Found AST (Year 2007)
 Inferential models and uncertainty measures, Univ. La Sapienza - Found AST (Year 2008)
 PRIN 2008: Dynamic decision models under partial and vague knowledge (MIUR)
 Dynamic decision models under uncertainty, Univ. La Sapienza (Year 2010)
 Methods and models for decisions under uncertainty, Univ. La Sapienza (Year 2011)
 Bayesian inference, envelopes of probabilities and their applications, Univ. La Sapienza (Year 2014)
 Numerical and probabilistic models for the management of information, Univ. La Sapienza (Year 2015)
 1/2/2013-1/2/2016 G.N. 2010FP79LR-003 (MIUR) Logical Methods for dealing with the information
 04/2015-03/2017 F.N. J52I14001640001 (Italian Ministry of Health) Intelligent decision systems for the identification of doping cases

Other research activity:

Association to research groups: AMASES (Associazione di Matematica per le Applicazioni alle Scienze Economiche e Sociali), GNAMPA (Gruppo Nazionale per l'Analisi Matematica, la Probabilità e le loro Applicazioni)
 - Review for Mathematical Review
 - Referee for the following journals: *Elettronic J. of Statistics*, *J. of Official Statistics*, *Fuzzy Sets and Systems*, *Int. J. of Approximate Reasoning*, *Kybernetika*, *Theory and Decision*, *J. of Pure and Applied Mathematics*.
 - Member of the Committee of PhD in Matematica e informatica per l'elaborazione e la rappresentazione dell'informazione e della conoscenza.
 - Evaluation of projects for Swiss National Science Foundation, MIUR.

Software:

Fast closure computation and representation by means of DAGs of conditional independencies (in collaboration with M. Baiocchi, G. Busanello).
 Coherence check and extensions of conditional probability assessments and lower-upper envelopes of conditional probabilities (in collaboration with M. Baiocchi, A. Capotorti, L. Galli, S. Tognoloni, F. Rossi). IAS-algorithm: iterative inverse solver for MEG (in collaboration with D. Calvetti, E. Somersalo, A. Pascarella, F. Pitolli)

Teaching:

- Probability (from 2000 to 2002) C.L. Ingegneria Informatica - University La Sapienza Roma.
 - Probability and statistics (a.a. from 2001 to 05) C.L. Ingegneria Informatica - University La Sapienza Roma.
 - Probability and Statics, Master in Gestione dell'energia nei parchi, nelle aree protette, nelle isole minori ed in zone rurali finalizzate alla sostenibilita' ambientale, University La Sapienza, Roma 2003.
 - Probability (from 2004 to 2008) C.L. Ingegneria Gestionale - University La Sapienza Roma.
 - Probability and Statics, Master in Esperto nella quantificazione e gestione del rischio finanziario, University of Perugia 2004.
 - Probability, PhD in Matematica e informatica per l'elaborazione e la rappresentazione dell'informazione e della conoscenza.
 - Probability and Statics II (a.a. 2007/08) C.L. Ingegneria dei Trasporti (L.S.) - University La Sapienza Roma.

- Probability (2010) C.L. Ingegneria Gestionale - University La Sapienza Roma.
- Probabilistic models for finance (from 2009) C.L. Ingegneria Gestionale - University La Sapienza Roma. - Probability (from 2012) C.L. Ingegneria Gestionale - University La Sapienza Roma.
- Probability (from 2013) C.L. Ingegneria Meccanica - University La Sapienza Roma.

Publications (selected list):

1. D. Petturiti, B. Vantaggi (in press). Envelopes of conditional probabilities extending a strategy and a prior probability. *INTERNATIONAL JOURNAL OF APPROXIMATE REASONING*.
2. G. Coletti, D. Petturiti, B. Vantaggi (2016). A savage-like representation theorem for preferences on multi-acts. *Advances in Intelligent Systems and Computing* 456, 127–134.
3. G. Coletti, D. Petturiti, B. Vantaggi (2016). When upper conditional probabilities are conditional possibility measures. *FUZZY SETS AND SYSTEMS* 304, 45-64.
4. D. Petturiti, B. Vantaggi (2016). Envelopes of joint probabilities with given marginals under absolute continuity or equivalence constraints. *Advances in Intelligent Systems and Computing* 456, 399–406
5. D. Petturiti, B. Vantaggi (2016). Envelopes of joint probabilities with given marginals under absolute continuity or equivalence constraints. *Advances in Intelligent Systems and Computing* 456, 399–406
6. G. Coletti, D. Petturiti, B. Vantaggi (2016). Conditional belief functions as lower envelopes of conditional probabilities in a finite setting. *INFORMATION SCIENCES* 339 p. 64–84.
7. G. Coletti, D. Petturiti, B. Vantaggi (2015). Rationality principles for preferences on belief functions. *KYBERNETIKA* 51 p. 486–507.
8. G. Coletti, D. Petturiti, B. Vantaggi (2015). Decisions under risk and partial knowledge modelling uncertainty and risk aversion. *Proc.of ISIPTA 2015* p. 77–86.
9. D. Calvetti, A. Pascarella, F. Pitolli, B. Vantaggi (2015) A hierarchical Krylov-Bayes iterative inverse solver for MEG with physiological preconditioning. *INVERSE PROBLEMS* 31-125005
10. A. Capotorti, G. Coletti, B. Vantaggi (2014). Standard and nonstandard representability of positive uncertainty orderings. *KYBERNETIKA* 50 p. 189–215
11. G. Coletti, D. Petturiti, B. Vantaggi (2014). Choquet expected utility representation of preferences on generalized lotteries. *Communications in Computer and Information Science*, 443, 444-453.
12. G. Coletti, D. Petturiti, B. Vantaggi (2014). Bayesian inference: the role of coherence to deal with a prior belief function. *STATISTICAL METHODS & APPLICATIONS* 23(4) p. 519–545
13. G. Coletti, D. Petturiti, B. Vantaggi (2014). Possibilistic and probabilistic likelihood functions and their extensions: Common features and specific characteristics. *FUZZY SETS AND SYSTEMS*, 250 p. 25–51.
14. G. Coletti, R. Scozzafava, B. Vantaggi (2014). Do inferential processes affect uncertainty frameworks? *FUZZY SETS AND SYSTEMS*, 16 p. 3–20.
15. E. Stanghellini, B. Vantaggi (2013) Identification of discrete concentration graph models with one hidden binary variable. *BERNOULLI* 19(5A) p. 1920–1937.
16. A. Ferrero, M. Prioli, S. Salicone, B. Vantaggi (2013). A 2-D Metrology-Sound Probability–Possibility Transformation. *IEEE TRANSACTIONS ON INSTRUMENTATION AND MEASUREMENT*, 62(5) p. 982 – 990.
17. G. Coletti, R. Scozzafava, B. Vantaggi (2013) Inferential processes leading to possibility and necessity. *INFORMATION SCIENCES*, 245 (1) p. 132-145.
18. G. Coletti, D. Petturiti, B. Vantaggi (2013). Probabilistic fuzzy reasoning in a coherent setting Synergies of Soft Computing and Statistics for Intelligent Data Analysis *Advances in Intelligent Systems and Computing* p. 440-447.

19. M. Baiocchi, D. Petturiti, B. Vantaggi (2013). Qualitative combination of independence models. LECTURE NOTES LNAI 7958, p.37–48.
20. G. Coletti, B. Vantaggi (2013). Hybrid models: probabilistic and fuzzy information. Synergies of Soft Computing and Statistics for Intelligent Data Analysis Advances in Intelligent Systems and Computing p. 63-72.
21. G. Coletti, O. Gervasi, S. Tasso, B. Vantaggi (2012). Generalized Bayesian inference in a fuzzy context: From theory to a virtual reality application. COMPUTATIONAL STATISTICS & DATA ANALYSIS, vol. 56, p. 967-980.
22. A. Brozzi, A. Capotorti, B. Vantaggi (2012). Incoherence correction strategies in statistical matching. INTERNATIONAL JOURNAL OF APPROXIMATE REASONING, vol. 53, p. 1124-1136.
23. A. Capotorti, G. Coletti, B. Vantaggi (2012). A dynamic conditional decision model. In: Kroupa, Vejnárova (Eds). Proc. of the 9th Workshop on Uncertainty processing. p. 22-33, Prague: Faculty of management, Univ. of Economics, Mariánské Lázně.
24. M. Baiocchi, G. Busanello, B. Vantaggi (2011). Acyclic directed graphs representing independence models. INTERNATIONAL JOURNAL OF APPROXIMATE REASONING, vol. 52(2), p. 2–18.
25. M. Baiocchi, G. Busanello, B. Vantaggi (2011). Exploiting independencies to compute semigraphoid and graphoid structures. INTERNATIONAL JOURNAL OF APPROXIMATE REASONING, vol. 52(5), p. 565-579.
26. M. Baiocchi, G. Coletti, D. Petturiti, B. Vantaggi (2011). Inferential models and relevant algorithms in a possibilistic framework. INTERNATIONAL JOURNAL OF APPROXIMATE REASONING, vol. 52(5), p. 580–598.
27. G. Coletti, B. Vantaggi (2010). From comparative degree of belief to conditional measures. In: Greco et al.. Preferences and decisions: models and applications. vol. 257, p. 69-84, SPRINGER.
28. G. Busanello, G. Coletti, B. Vantaggi (2010). Independence and conditional decomposable information measures. INTERNATIONAL JOURNAL OF UNCERTAINTY, FUZZINESS AND KNOWLEDGE BASED SYSTEMS, vol. 18, p. 225-246.
29. B. Vantaggi (2010). Incomplete preferences on conditional random variables. Representability by coherent conditional previsions. MATHEMATICAL SOCIAL SCIENCES, vol. 60, p. 104-112.
30. G. Coletti, B. Vantaggi (2010). From comparative degrees of belief to conditional measures. In: Preferences and decisions: models and applications. Studies in Fuzziness and Soft Computing, 257, p. 69-84.
31. M. Baiocchi, G. Busanello, B. Vantaggi (2009). Conditional independence structure and its closure: inferential rules and algorithms. INTERNATIONAL JOURNAL OF APPROXIMATE REASONING, vol. 50, p. 1097-1114.
32. R. Scozzafava, B. Vantaggi (2009). Fuzzy Inclusion and Similarity through Coherent Conditional Probability. FUZZY SETS AND SYSTEMS, vol. 160, p. 292-305.
33. G. Coletti, B. Vantaggi (2009). T-conditional possibilities: coherence and inference. FUZZY SETS AND SYSTEMS, vol. 160, p. 306-324.
34. A. Capotorti, G. Coletti, B. Vantaggi (2008). Preferences representable by a lower expectation: some characterizations. THEORY AND DECISION, vol. 64, p. 119-146.
35. B. Vantaggi (2008). Statistical matching of multiple sources: a look through coherence. INTERNATIONAL JOURNAL OF APPROXIMATE REASONING, vol. 49, p. 701-711.
36. G. Coletti, B. Vantaggi (2008). A view on conditional measures through local representability of binary relations. INTERNATIONAL JOURNAL OF APPROXIMATE REASONING, vol. 47, p. 268-283.
37. G. Coletti, L. Paulon, R. Scozzafava, B. Vantaggi (2007). Measuring the quality of health-care services: a likelihood-based fuzzy modeling approach. In: K. Mellouli. Symbolic and Quantitative Approaches to Reasoning with Uncertainty. vol. LNAI 4724, p. 853-864, Springer.

38. D. Dubois, H. Fargier, B. Vantaggi (2007). An axiomatization of conditional possibilistic preference functionals. In: K. Mellouli. *Symbolic and Quantitative Approaches to Reasoning with Uncertainty*. vol. LNAI 4724, p. 803-815, Springer.
39. G. Coletti, B. Vantaggi (2007). Comparative models ruled by possibility and necessity: a conditional world. *INTERNATIONAL JOURNAL OF APPROXIMATE REASONING*, vol. 45, p. 341-363.
40. G. Coletti, B. Vantaggi (2006). Possibility theory: conditional independence. *FUZZY SETS AND SYSTEMS*, vol. 157, p. 1491-1513.
41. L. Ferracuti, B. Vantaggi (2006). Independence and conditional possibility for strictly monotone triangular norms. *INTERNATIONAL JOURNAL OF INTELLIGENT SYSTEMS*, vol. 21, p. 299-323.
42. G. BUSANELLO, G. Coletti, R. Scozzafava, B. VANTAGGI (2006). Aggregated comparative likelihoods. In *Proc. of Information Processing and Management of Uncertainty in Knowledge-based Systems (IPMU'06)*. vol. 3, p. 2316-2323, Paris:EDK (France).
43. G. Coletti, B. Vantaggi (2006). Representability of ordinal relations on a set of conditional events. *THEORY AND DECISION*, vol. 60, p. 137-174.
44. G. Coletti, B. VANTAGGI (2005). Comparative Conditional Possibilities. In: L. Godo. *Symbolic and Quantitative Approaches to Reasoning with Uncertainty*. vol. LNAI 3571, p. 872-883, Springer.
45. B. Vantaggi (2005). The role of coherence for handling probabilistic evaluations and conditional independence. *SOFT COMPUTING*, vol. 69(8), p. 617-628.
46. A. Capotorti, L. Galli, B. Vantaggi (2003). Locally strong coherence and inference with lower-upper probabilities. *SOFT COMPUTING*, vol. 7, p. 280-287.
47. B. Vantaggi (2003). Conditional Independence Structures and Graphical Models. *INTERNATIONAL JOURNAL OF UNCERTAINTY, FUZZINESS AND KNOWLEDGE BASED SYSTEMS*, vol. 11(5), p. 545-571.
48. M. Baiocchi, A. Capotorti, S. Tulipani, B. Vantaggi (2002). Simplification Rules for the Coherent Probability Assessment Problem. *ANNALS OF MATHEMATICS AND OF ARTIFICIAL INTELLIGENCE*, vol. 35, p. 11-28.
49. A. Capotorti, B. Vantaggi (2002). Locally strong coherence in inferential processes. *ANNALS OF MATHEMATICS AND OF ARTIFICIAL INTELLIGENCE*, vol. 35, p. 125-149.
50. B. Vantaggi (2002). The L-separation criterion for description of cs-independence models. *INTERNATIONAL JOURNAL OF APPROXIMATE REASONING*, vol. 29(3), p. 291-316.
51. B. Vantaggi (2001). Conditional independence in a finite coherent setting. *ANNALS OF MATHEMATICS AND OF ARTIFICIAL INTELLIGENCE*, vol. 32, p. 287-314.
52. A. Capotorti, B. Vantaggi (2000). Axiomatic Characterization of Partial Ordinal Relations. *INTERNATIONAL JOURNAL OF APPROXIMATE REASONING*, vol. 24, p. 207-219.
53. M. Baiocchi, A. Capotorti, S. Tulipani, B. Vantaggi (2000). Elimination of Boolean Variables for Probabilistic Coherence. *SOFT COMPUTING*, vol. 4(2), p. 81-88.
54. A. Capotorti, B. Vantaggi (2000). Relationships Among Ordinal Relations on a Finite Set of Events. In B. BOUCHON-MEUNIER; R.R. YAGER; L.A. ZADEH. *Information, Uncertainty and Fusion*. p. 447-458, DORDRECHT:Kluwer.
55. A. Capotorti, B. Vantaggi (1999). A General Interpretation of Conditioning and its Implication on Coherence. *SOFT COMPUTING*, vol. 3, p. 148-153.
56. A. Capotorti, G. Coletti, B. Vantaggi (1998). Non Additive Ordinal Relations Representable by Lower and Upper Probabilities. *KYBERNETIKA*, vol. 34(1), p. 79-90.