Luigi Portinale

Curriculum vitae

PERSONAL DATA

Born in Alba (CN) il 14.2.1964
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BIO AND EDUCATION

Luigi Portinale earns a Laurea degree in Computer Science on June 28th, 1988 (summa cum laude) at the University of Torino and a PhD in Computer Science on 1994 (University of Torino and Milano consortium).

From 1993 to 2000 he has been an Assistant Professor of Computer Science at the Faculty of Science, University of Torino and University of Eastern Piedmont.

From 2000 to 2004 he has been an Associate Professor of Computer Science at the Faculty of Science, University of Eastern Piedmont.

He is currently a Full Professor of Computer Science at the same University.

He has been Vice-director of the Computer Science Department from 2005 to 2007

He has been Director of the Computer Science Department from 1/11/2007 to 31/12/2011.

He's currently Head of the Computer Science Institute of the Department of Sciences and Technological Innovation.

He has been member of the Academic Senate of U.P.O. (term of office 2012/2015).

He has been University Representative for Informaton Systems at the Fondazione CRUI from 2005 to 2012.

He has been member of the Technical and Scientific Board of the CSI-Piemonte from 2007 to 2011 and of the Guarantee Committe of the WI-PIE Program of Regione Piemonte from 2007 to 2010.

He's research unit member in the CNIT (inter-university national consortium for telecommunication) and in the CINI (inter-university national consortium for computer science) consortia.

He is University Representative in the ICT Innovation Cluster of Regione Piemonte since 2009.

He's member of the Technical and Scientific Board of the ITS on Sustainable Mobility, Aerospace and Mechatronics from 2013.

He's member of the Steering Committe of Piedmont Aerospace District from 2014.

He's member of the Board of the PhD in Computer Science of the University of Torino (PhD cicles XXVI, XVII, XXVIII, XXXI, XXXII).

His reasearch interests focus on knowledge representation and reasoning in Artificial Intelligence systems, with particular attention devoted to Case-Based Reasoning (CBR) methodologies,

Probabilistic-Based Uncertain Reasoning (Bayesian Belief Networks) and Intelligent Data Analysis (IDA).

The first research stream concerns:

1) studies about CBR foundations, with particular attention to adaptation methodologies of the retrieved solutions, to methodologies and techniques for the case base management, and to the introduction and management of temporal information in the CBR cycle;

2) studies about the intergration of CBR and Model-Based Reasoning (multi-modal reasoning), with particular attention to diagnostic systems;

3) the use of CBR in medical informatics, with the aim of developing decision support systems (with experiences in the treatment of diabetic patients as well as patients undegoing dialysis procedures);

4) studies concerning the relationships between distance-based e fuzzy-based approaches to case retrieval, with application to recommender, e-commerce and configuration systems, with particular attention to the use of fuzzy-SQL for the system implementation.

5) methodologies for case retrieval from Big Data, such as locality-sensitive hashing (LSH)

The "reasoning under uncertainty" stream concerns:

1) studies about the use of probabilistic formalisms based on Bayesian Networks for the monitoring and diagnosis of systems that may exhibit time-varying behavior;

2) studies concerning the relationships among classical reliability methodologies and AI-based techniques grounded on Bayesian Networks.

3) application of Decision Networks in reliability, FDIR (Fault Detection Identification and Recovery) with particular attention to aerospace applications, and in Information Security.

4) methodologies based on Markov Random Field (MRF) for recommender systems.

Concerning the IDA stream, research is carried out in order to determine suitable methodologies for the intelligent analysis of chemical data in the agri-food domain, with the goal of traceability, authentication, fraud detection and quality control.

A further research stream investigated in the past concerned the use of Petri Nets for diagnostic reasoning systems.

He has been the tutor or the co-tutor of several italian or foreign students (Laurea or PhD degrees).

He received the Sollac prize for the best paper (a joint work with L. Console and D. Theseider Dupre') on 1991 at the 11th International Workshop On Expert Systems and their Applications (Avignon).

He received the D.J. Groen Prize 2015 of the Safety and Reliability Group of the Institution of Mechanical Engineers (UK) for the paper "Approaching Dynamic Reliability with Predictive and Diagnostic Purposes by exploiting Dynamic Bayesian Networks", published on Journal of Risk and Reliability, 228(5), 2014 (with Daniele Codetta Raiteri).

He has been co-chair of the First Italian Workshop on CBR (1998), of the Fifth European Workshop on CBR (2000) and of the Workshop on Applications of Petri Nets to Intelligent System Development (1999).

He is volume editor of "Advances in Case-Based Reasoning", Lecture Notes in Artificial Intelligence 1898, Springer Verlag, 2000.

He has been Guest Editor for the Special Issue on CBR in the Health Sciences of the "Applied Intelligence Journal".

He has also served as Review Board Member for the same international journal until 2012.

He is an Editorial Board member of Journal of Quality and Reliability Engineering.

He has been member of several program committes (in particular all the European and International conferences on CBR since 2000)

and reviewer for several international journals and conferences.

He acted as Area Chair for the 19th, 20th, 21th, 22nd, 23th, 25th and 26th IEEE International Conference on Tools with Artificial Intelligence (ICTAI).

He has been invited to give scientific talks in several national and internation institutions among which ITC-IRST, MIT, Georgia Tech, MITRE Corp., University of Zaragoza, University of Murcia.

He has been invited speaker at MMR2004 and MMR2007 conferences (Mathematical Methods in Reliability).

He is author of more than 100 papers on international journals and proceedings (all refereed works).

He has been involved (and he still is involved) on several research projects of national and international relevance (both as research unit member and unit coordinator).

He has a stable research collaboration with a number of researchers in several research institutions both in Italy (University of Torino, University of Pavia, Fondazione Bruno Kessler (ex IRST-ITC), ENEA) and abroad (Universidad de Murcia, Universidad de Zaragoza, Norvegian University of Science and Technology).

He is member of the Italian Association for Artificial Intelligence (AI*IA), of the Association for the Advancement of Artificial Intelligence (AAAI) and of IEEE Computer Society.

He has been member of the review board of the French Agence Nationale de la Recherche (ANR).

He's author (with D. Codetta Raiteri) of the book "Modeling and Analysis of Dependable Systems: a Probabilistic Graphical Model Perspective"; World Scientific Publ. (2015)

UNIVERSITY CAREER

2004-	Ful Professor, Università del Piemonte Orientale
2000-2004	Associate Professor, Università del Piemonte Orientale
1998-2000	Assistant Professor, Università del Piemonte Orientale
1993-1998	Assistant Professor, Università di Torino

UNIVERSITY POSITIONS

2015-	Board Member of CINI: National Consortium for Computer Science
2015-	Member of the Department Board of DiSIT, Università del Piemonte Orientale
2012-	Head of the Computer Science Institute, DiSIT, Università del Piemonte Orientale

2012-2015	Member of University Senate, Università del Piemonte Orientale
2011-	Member of the Board of the PhD in Computer Science, Università di Torino
2009-	University representative, ICT Innovation Cluster, Regione Piemonte
2007-2011	Chair of the Computer Science Department, Università del Piemonte Orientale
2007-2010	Member of the Board of Wi-Pie Program, Regione Plemonte
2005-2012	University representative for the Information System, CRUI
2005-2007	Deputy Chair of the Computer Science Department, Università del Piemonte Orientale

SCIENTIFIC POSITIONS

2014-	Steering Committe Member of Piedmont Aerospace District (CDAP)
2013-	Editorial Board Member of International Journal of Quality, Statistics and Reliability
2013-	Technical Scientifical Committe Member of Istituto Tecnico Superiore Mobilita' Sostenibile, Aerospazio e Meccatronica, Regione Piemonte
2012-2015	Technical Scientifical Committe Member of EComLab: center for e-commerce studies
2007-2011	Technical Scientifical Committe Member of CSI-Piemonte
2006-2010	Review Board Member of Applied Intelligence Journal

MAIN FIELDS OF INTEREST

1. Artificial Intelligence
2. Case-Based Reasoning
3. Probabilistic Graphical Models
4. Machine Learning
5. Intelligent Data Analysis
6. Data Mining
7. Depedability and Reliability
8. Medical Informatics

CURRENT ISSUES OF RESEARCH

1. Case-Based Reasoning

Advanced retrieval techniques for Big Data (e.g., Locality Sensitive Hashing); application of CBR to recommender systems and to financial decision support.

1. Probabilistic Graphical Models

Application of PGM modeling and algorithms to Reliability e Dependability: continuous time models as Continouos Time Bayesian Networks (CTBN) and extensons (GCTBN); decision models (Influence Diagrams e LIMID) for FDIR (Fault Detection Identification and Recovery) and

Information Security.
Application of undirected models (Markov Random Fields) to recommender systems

2. Machine Learnng, Data Mining e Intelligent Data Analysis

Definition of intelligent data analysis techniques for the identification, authentication and quality control of agri-food products (wine, honey, rice, etc...).

3. Deep Learning

Deep learning models for Big Data management and analytics

CURRENT FUNDED PROJECTS

PROGRAMME	FUNDED PROJECT
EU- FP7 FoodIntegrity	INTELLITRACE – "Improving comprehensive artificial intelligence, validation and harmonization methods as "functional bridge" between untargeted analytical approaches and food tracking/authenticity within the Food Integrity field

TOP FIVE PAPERS

1. L. Portinale, D. Codetta Raiteri. "Modeling and Analysis of Dependable Systems: a Probabilistic Graphical Model Perspective"; World Scientific Publishing, 2015.
2. H. Langseth, L. Portinale. "Bayesian Networks in Reliiabilty", Reliability Engineering and System Safety, vol. 92(1), pp. 92-108, 2007.
3. L. Portinale, P. Torasso, D. Magro. "Multimodal Diagnosis Combining Case-Based and Model-Based Reasoning: a Formal and Experimental Analysis", Artificial Intelligence, vol. 158 (2), pp. 109-153, 2004.
4. A. Bobbio, L. Portinale, M. Minichino, E. Ciancamerla. "Improving the analysis of dependable systems by mapping fault trees into Bayesian networks. Reliability Engineering and System Safety, vol. 71, pp. 249-260, 2001.
5. R. Schmidt, S. Montani, R. Bellazzi, L. Portinale, L. Gierl. Case-Based Reasoning for Medical Knowledge-Based Systems, International Journal of Medical Informatics, vol. 64, pp. 355-367, 2001.

AWARDS

1. Sollac Prize (1991) for the best paper (a joint work with L. Console and D. Theseider Dupre') at the 11th International Workshop On Expert Systems and their Applications (Avignon).
2. D.J. Groen Prize 2015 of the Safety and Reliability Group of the Institution of Mechanical Engineers (UK) for the paper "Approaching Dynamic Reliability with Predictive and Diagnostic Purposes by exploiting Dynamic Bayesian Networks", published on Journal of Risk and Reliability, 228(5), 2014 (with Daniele Codetta Raiteri).