

Curriculum Vitae

Dott. Marco Beccuti
Dipartimento Informatica
Università degli studi di Torino
C.So Svizzera, 185 - 10149 Torino (Italy)
Cell: +39 340 3991218
Tel: +39 011 6706780 Fax: +39 011 751603
Email: beccuti@di.unito.it
Web page: <http://www.di.unito.it/~beccuti>

Personal information

Nationality: Italian;

Date of birth: 05 July 1978;

Place of birth: Novi Ligure (AL) ITALY;

Current position: Assistant Professor (with tenure track - RTD B) at the Department of Computer Science in the Università degli Studi di Torino.

Research interests

- Performance evaluation of computer and communication systems;
- dependability evaluation of complex systems;
- optimization problems;
- theory and application of (Stochastic) Petri Nets (Generalized Stochastic Petri Nets, Stochastic Well-Formed Nets), Fault Trees and Markov Decision Processes;
- software tools for the Qualitative and Quantitative evaluation of stochastic models;
- application of stochastic models for systems biology;
- algorithms for the analysis of biological data.

Education

- *21st January 2008* “Ph.D.” in Computer Science at the Università degli Studi di Torino in cooperation (“Cotutela”) with the LAMSADE laboratory, Université Paris Dauphine, Paris, France.

Ph.D thesis title *Modeling and analysis of probabilistic systems. Formalisms and efficient algorithms*

Advisors Prof. G. Franceschinis (Univ. degli Studi del Piemonte Orientale) and Prof. S. Haddad (Univ. Paris Dauphine).

- *16th April 2004* “Laurea” in Computer Science 110/110 cum laude at the Università degli Studi del Piemonte Orientale “A. Avogadro”

“Laurea” thesis title *Trattamento delle simmetrie parziali nelle reti di Petri Stocastiche Ben Formate* (Exploiting partial symmetries in Stochastic Well Formed Nets)

Professional experience

- *October 2018-today.* Ordinary Member of Bioinformatics Italian Society (BITS).
- *October 2017.* Assistant Professor (with tenure track) at the Department of Computer Science in the Università degli Studi di Torino.
- *April 2017.* National scientific qualification to function as Associate Professor in Italian Universities (Area: Computer science 01/B1 and Computer Engineering 09/H1).
- *November 2014.* Visitor professor at the Jagiellonian University: Prof. Maciej Malecki and Prof. Pawel Wolkow.
- *January 2013.* Visitor at the University of King Abdulaziz. Collaborator: Prof. Omar Barukab.
- *October 2012-October 2017* Assistant Professor (non-tenure track) at the Department of Computer Science in the Università degli Studi di Torino.
- *June 2011-September 2011.* Visitor at the University of California Riverside. Collaborator: Prof. Gianfranco Ciardo.
- *March 2011 - September 2012* Two years research fellowship on the project “Modelli ad alto livello per la specifica di Processi Decisionali Markoviani con applicazioni alla definizione di strategie ottimali di manutenzione preventiva o recupero da malfunzionamenti in sistemi critici” at the Università degli Studi di Torino (Assegni di ricerca cofinanziati dalla regione Piemonte “contenimento del brain drain”).
- *March 2009 - February 2011.* Two years research fellowship on the project “Modelli ad alto livello per la specifica di Processi Decisionali Markoviani

con applicazioni alla definizione di strategie ottimali di manutenzione preventiva o recupero da malfunzionamenti in sistemi critici” at the Università degli Studi di Torino (Assegni di ricerca cofinanziati dalla regione Piemonte “contenimento del brain drain”).

- *January 2008-Dicember 2008.* One term contract on the project “Efficient Multi-level dependability models and analysis algorithms for studying the interdependencies between the Electricity and Information Infrastructures” at the National Inter-University Consortium for Telecommunications (CNIT).
- *April 2006-today.* Member of Consorzio Nazionale Interuniversitario per le Telecomunicazioni (CNIT) (Research Unit of the Dipartimento di Informatica, Università degli Studi di Torino)
- *June 2006 - July 2007* visiting scholar at the LAMSADE laboratory, Université Paris Dauphine and at the Laboratoire d’informatique de Paris.
- *7th - 22th March 2005* Bertinoro International Spring School for Graduate Studies in Computer Science 2005 (BISS05)
- *September 2004-today.* Responsible for the maintenance and distribution of the GreatSPN software (<http://www.di.unito.it/~greatspn>)
- *August 2004 - August 2005* One year research scholarship on the project “Efficient Algorithms for stochastic model analysis” at the Computer Science Department of the Università degli Studi del Piemonte Orientale “Amedeo Avogadro” in collaboration with researchers of the University of Paris VI, LIP6 and the University of Paris Dauphine, LAMSADE; partially funded by the Perf project of the Italian Ministry of education and research (MIUR)
- *2002-2010.* Information technology expert at Network Informatica S.R.L. (IT company)
- *1997-2002.* Information technology expert at E.D.P. consulenza informatica (IT company)

Main international collaborations

- Prof. Serge Haddad, Laboratoire Specification et Verification, Ecole Normale Supérieure de Cachan, France;
- Prof. Gianfranco Ciardo, Department of Computer Science, Iowa State University, USA;
- Prof. Patrice Moreaux, Polytech Annecy-Chambery, University of Savoie, France;
- Prof. Andrew Miner, Department of Computer Science, Iowa State University, USA;
- Prof. Stefano Lonardi, Computer science and Engineering, University of California Riverside, USA;

- Prof. Omar Barukab, Department of Computer Science, University of King Abdulaziz, Saudi Arabia.
- Ph.D. Robert Birke, Cloud Server Technologies group , IBM Research Zurich, Switzerland.

Teaching

Bioinformatics course :

1 crediti - 8 ore di lezione (corso di Biologia ed Informatica - Univ. degli Studi di Torino.)
A.A. 2018/2019 2017/2018.

RNA sequence analysis course:

24 ore di lezione (Master in Bioinformatics and functional genomics - Univ. degli Studi di Milano)
A.A. 2017/2018.

Elaborazione Statistica dei Dati Sperimentali course:

4 crediti - 32 ore di lezione (corso di Biologia - Univ. degli Studi di Torino.)
A.A. 2018/2019 2017/2018, 2016/2017, 2015/2016, 2014/2015, 2013/2014.

NGS data analysis: computational aspects.

20 ore di lezione (Doctoral School in Life and Health Sciences - Univ. degli Studi di Torino.)
A.A. 2017/2018, 2016/2017, 2015/2016.

Programming for data science course:

3 crediti - 25 ore di lezione (Master of Stochastics and Data Science - Univ. degli Studi di Torino.)
A.A. 2018/2019 2017/2018, 2016/2017, 2015/2016.

Qualitative and probabilistic system verification

20 ore di lezione (Doctoral School in Computer Science - Univ. degli Studi di Torino.)
A.A. 2017/2018, 2016/2017, 2015/2016, 2014/2015.

Informatica course:

6 crediti - 48 ore di lezione (corso di laurea in Ottica e Optometria - Univ. degli Studi di Torino.)
A.A. 2012/2013.

Strumenti e tecniche per la condivisione dei contenuti in rete:

6 crediti - 44 ore di lezione (corso di laurea in Giurisprudenza - Univ. del Piemonte Orientale.)
A.A. 2011/2012, 2010/2011, 2009/2010.

Programmazione:

6 crediti - 44 ore di lezione (corso di laurea in Giurisprudenza - Univ. del Piemonte Orientale.)
emphA.A. 2008/2009, 2007/2008.

Laboratorio di Informatica di Base

(corso di laurea in Chimica e Biologia)

A.A. 2005/2006.

Esercitazioni del corso di Sistemi di elaborazione: Simulazione

(corso di laurea in Informatica - Univ. del Piemonte Orientale.)

A.A. 2005/2006.

Scientific publications

In Refereed International Journals:

- [32] N. Kulkarni, L. Alessandr, R. Panero, M. Arigoni, M. Olivero, F. Cordero, M. Beccuti and R. A. Calogero. *Reproducible Bioinformatics Project: A community for reproducible bioinformatics analysis pipelines*. BMC Bioinformatics, Volume 19, Issue 10, pages 211-219, October 2018. (doi:10.1186/s12859-018-2296-x)
ISSN:1471-2105
(**Impact Factor:** 3.114)
- [31] L. Coscujuela Tarrero, G. Ferrero, V. Miano, C. De Intinis, L. Ricci, M. Arigoni, F. Riccardo, L. Annaratone, I. Castellano, R.A. Calogero, M. Beccuti, F. Cordero and M. De Bortoli. *Luminal breast cancer specific circular RNAs uncovered by a novel tool for data analysis*. Oncotarget, Volume 9, Issue 18, 2018, Pages 14580-14596, Impact Journals.
ISSN: 1949-2553
(**Impact Factor:** 5.168)
- [J30] P. Mozgunov, M. Beccuti, A. Horvath, T. Jaki, R. Sirovich, E. Bibbona. *A review of the deterministic and diffusion approximations for stochastic chemical reaction networks*. Reaction Kinetics, Mechanisms and Catalysis, Volume 123, Issue 2, 1 April 2018, Pages 289-312, Springer Press.
ISSN: 1878-5190
(**Impact Factor:** 1.264)
- [J29] M. Beccuti, F. Cordero, M. Arigoni, R. Panero, E. G. Amparore, S. Donatelli and R. A. Calogero *SeqBox: RNAseq/ChIPseq reproducible analysis on a consumer game computer*. Bioinformatics, Volume 34, Issue 5, 1 March 2018, Pages 871-872. Oxford University Press.
ISSN:1367-4803
(**Impact Factor:** 7.307)
- [J28] M. Beccuti, E. Genuardi, G. Romano, L. Monitillo, D. Barbero, M. Boccadoro, M. Ladetto, R. A. Calogero, S. Ferrero and F. Cordero. *Hash-Clone: a new tool to quantify the minimal residual disease in*

- B-cell lymphoma from deep sequencing data.* BMC Bioinformatics, Volume 18, Issue 1, 23 November 2017.
(doi:10.1186/s12859-017-1923-2)
ISSN:1471-2105
(Impact Factor: 3.450)
- [J27] G. Ferrero, V. Miano, M. Beccuti, G. Balbo, M. De Bortoli, and F. Cordero. *Dissecting the genomic activity of a transcriptional regulator by the integrative analysis of omics data.* Scientific Reports, Volume 7, Article number: 8564 (2017), Nature Publishing Group.
(doi:10.1038/s41598-017-08754-9)
ISSN: 2045-2322
(Impact Factor: 4.847)
- [J26] F. Martina, M. Beccuti, G. Balbo, F. Cordero. *A New Features Selection Method to Improve Classification Performances in Imbalanced Data Sets.* PLOS ONE 12(8):e0177475. Public Library of Science, Aug. 2017.
(doi:10.1371/journal.pone.0177475)
ISSN:1932-6203
(Impact Factor: 2.806)
- [J25] N. Totis, L. Follia, F. Cordero, C. Riganti, F. Novelli, G. Balbo and M. Beccuti. *Overcoming the lack of kinetic information in biochemical reactions networks.* ACM SIGMETRICS Performance Evaluation Review, Volume 44(4) Pages 91-102, 2017. ACM New York, NY, USA.
ISSN:0163-5999
- [J24] P. Catarsi , F. Cordero, G. Ferrero, M. Beccuti, V. Poletto, E. Bonetti, L. Villani, M. Massa, G. Fois, R. Campanelli, U. Magrini, V. Rosti, G. Barosi. *Deregulated Genes in Hematopoietic Stem Cells Isolated from Spleen of Patients with Myelofibrosis.* Blood, 128(22), 4279. 2016. (Extended abstract.)
ISSN: 0006-4971
(Impact Factor: 11.841)
- [J23] G. Miglio, A. D. Sabatino, E. Veglia, M. T. Giraud, M. Beccuti, F. Cordero. *A computational analysis of S-(2-succino)cysteine sites in proteins.* BBA Proteins and Proteomics, Elsevier Press., volume 1864(2), 2016
ISSN:1570-9639
(Impact Factor: 3.127)
- [J22] M. Munoz-Amatriain, S. Lonardi, M. Luo, . . . , M. Beccuti et al. *Sequencing of 15,622 gene-bearing BACs clarifies the gene-dense regions of the barley genome.* Plant Journal, Ed. Wiley-Blackwell, volume 84(1), 2015, Pages 216-227.

ISSN:0960-7412

(**Impact Factor:** 5.972)

ISI Journal Citation Reports Ranking: 2014: 10/200 (Plant Sciences).

- [J21] A. Angius, G. Balbo; M. Beccuti; E. Bibbona; A. Horvath; R. Sirovich. *Approximate analysis of biological systems by hybrid switching jump diffusion*. Theoretical Computer Science, Elsevier Press., volume 587, July 04, 2015, Pages 49-72
ISSN:0304-3975
(**Impact Factor:** 0.657)
- [J20] C. Fornari, G. Balbo, S.M. Halawani, O. Ba-Rukab, A.R. Ahmad, R. A. Calogero, F. Cordero and M. Beccuti. *A versatile mathematical work-flow to explore how Cancer Stem Cell fate influences tumor progression*. BMC Systems Biology, Volume 9, Issue 3:S1, June 2015.
ISSN:1752-0509
(**Impact Factor:** 2.44)
- [J19] M. Carrara, J. Lum, F. Cordero, M. Beccuti, S. Donatelli, R.A. Calogero, F. Zolezzi. *Alternative splicing detection workflow needs a careful combination of sample prep and bioinformatics analysis*. BMC Bioinformatics, Volume 16, Issue 9:S2, June 2015.
ISSN:1471-2105
(**Impact Factor:** 2.58)
- [J18] E. Medico, M. Russo, G. Picco, C. Cancelliere, E. Valtorta, G. Corti, M. Buscarino, C. Isella, S. Lamba, B. Martinoglio, S. Veronese, S. Siena, A. Sarote-Bianchi, M. Beccuti, M. Mottolese, M. Linnebacher, F. Cordero, F. Di Nicolantonio, A. Bardelli. *The molecular landscape of colorectal cancer cell lines unveils clinically actionable targets*. Nature Communications, Volume 6, Article number 7002, April 2015.
ISSN:2041-1723
(**Impact Factor:** 10.742)
- [J17] M. Beccuti, C. Fornari, G. Franceschinis, S. M. Halawani, O. Barukab, A. Ahmad, G. Balbo. *From Symmetric Nets to Differential Equations exploiting Model Symmetries*. The Computer Journal, Oxford University Press., Volume 58, Issue 1, Jan. 2015, Pages 23-39.
ISSN:0010-4620
(**Impact Factor:** 0.888)
- [J16] C. Fornari, M. Beccuti, S. Lanzardo, L. Conti, G. Balbo, F. Cavallo, R.A. Calogero, F. Cordero. *A mathematical-biological joint effort to investigate the tumor-initiating ability of cancer stem cells*. PLoS ONE 9(9):e106193, Public Library of Science, Sept. 2014.

ISSN:1932-6203 - doi:10.1371/journal.pone.0106193

(**Impact Factor:** 4.411)

- [J15] M. Beccuti, M. Carrara, F. Cordero, F. Lazzarato, S. Donatelli, F. Nadalin, A. Policriti and R.A. Calogero. *Chimera: a Bioconductor package for secondary analysis of fusion products*. Bioinformatics, Oxford University Press., Volume 30, Issue 24, Dec.2014, Pages 3556-3557. ISSN:1367-4803
(**Impact Factor:** 4.621)
- [J14] M. Beccuti, G. Franceschinis, D. Codetta-Raiteri and S. Haddad. *Computing Optimal Repair Strategies by means of NdRFT Modelling and Analysis*. The Computer Journal, Oxford University Press., Volume 57, Issue 12, Dec.2014, Pages 1870-1892. ISSN:0010-4620
(**Impact Factor:** 0.888)
- [J13] M. Beccuti, M. Carrara, F. Cordero, S. Donatelli, R.A. Calogero. *The structure of state of art gene fusion-finder algorithms*. Journal of OA Bioinformatics, Volume 1(1), 2013.
- [J12] S. Lonardi, D Duma, M. Alpert, F. Cordero, M. Beccuti, P. R. Bhat, Y. Wu, G. Ciardo, B. Alsaihati, Y. Ma, S. Wanamaker, J.Resnik, M. Luo, T. J. Close. *Combinatorial Pooling Enables Selective Sequencing of the Barley Gene Space*. PLOS Computational Biology, Volume 9(4), 2013. ISSN:1553-734X
(**Impact Factor:** 5.215)
- [J11] M. Carrara, M. Beccuti, F. Cavallo, S. Donatelli, F. Lazzarato, F. Cordero, and R. Calogero. *State of art fusion-finder algorithms are suitable to detect Transcription-Induced Chimeras in normal tissues*. BMC Bioinformatics, Volume 14, Suppl. 7, 2013. ISSN:1471-2105
(**Impact Factor:** 2.75)
- [J10] F. Cordero, M. Beccuti, C. Fornari, S. Lanzardo, L. Conti, F. Cavallo, G. Balbo and R. Calogero. *Multi-level model for the investigation of oncoantigen-driven vaccination effect*. BMC Bioinformatics, Volume 14, Suppl. 6, 2013. ISSN:1471-2105
(**Impact Factor:** 2.75)
- [J9] M. Carrara, M. Beccuti, F. Lazzarato, F. Cordero, R. A. Calogero, S. Donatelli and F. Cavallo. *State of the-art fusion-finder algorithms sensitivity and specificity*. Journal of BioMed Research International,

Volume 2013, Number 16, (2013), Pages 1-6
ISSN:1110-7243 - - DOI: <http://dx.doi.org/10.1155/2013/340620>
(**Impact Factor:** 2.436)

- [J8] K.F. Mayer, R. Waugh, P. Langridge, T.J. Close, . . . , M. Beccuti et al. *A physical, genetic and functional sequence assembly of the barley genome*. Nature, Volume 491, Pages 711-716. November 2012.
ISSN: 0028-0836 - DOI: 10.1038/nature11543
(**Impact Factor:** 36.280)
- [J7] M. Beccuti, S. Chiaradonna, F. Di Giandomenico, S. Donatelli, G. Dondossola, G. Franceschinis. *Quantification of Dependencies between Electrical and Information Infrastructures*. International Journal of Critical Infrastructure Protection, Volume 5, Issue 1, March 2012, Pages 14-27. Ed. Elsevier.
ISSN:1874-5482 - DOI: 10.1016/j.ijcip.2012.01.003
(**Impact Factor:** 0.630)
- [J6] F. Cordero, M. Beccuti, M. Arigoni, S. Donatelli, R.A. Calogero. *Optimizing a Massive Parallel Sequencing Workflow for Quantitative miRNA Expression Analysis*. PLoS ONE. Public Library of Science, 20 Feb 2012.
ISSN:1932-6203 - DOI:10.1371/journal.pone.0031630
(**Impact Factor:** 4.411)
- [J5] F. Cordero, M. Beccuti, S. Donatelli, R.A. Calogero. *Disclosing the nature of computational tools for the analysis of Next Generation Sequencing data*. International Journal of Current Topics in Medicinal Chemistry, Volume 12, 24 Issues, 2012.
ISSN:1568-0266
(**Impact Factor:** 4.112)
- [J4] M. Beccuti, G. Franceschinis, S. Haddad. *MDWNSolver: a framework to design and solve Markov Decision Petri Nets*. International Journal of Performability Engineering, Volume 7, Issue 5, September 2011, Pages 417-428.
ISSN: 0973-1318.
- [J3] S. Baarir, M. Beccuti, C. Dutheillet, G. Franceschinis and S. Haddad. *Lumping partially symmetrical stochastic models*. Performance Evaluation, Ed. Elsevier, Volume 68, Issue 1, January 2011, Pages 21-44.
ISSN:0166-5316.
(**Impact Factor:** 1.560)
- [J2] G. Balbo, M. Beccuti, M. De Pierro and G. Franceschinis. *First Passage Time Computation in Tagged GSPNs with Queue Places*. The

Computer Journal, Oxford University Press., Volume 54, Issue 5, May 2010, Pages 653-673.

ISSN:0010-4620.

(**Impact Factor:** 1.394)

- [J1] S. Baarir, M. Beccuti, D. Cerotti, M. De Pierro, S. Donatelli and G. Franceschinis. *The GreatSPN Tool: Recent Enhancements*. ACM Performance Evaluation Review Special Issue on Tools for Performance Evaluation, 36:(4): 4-9, 2009. Editors G. Casale, R.R. Muntz e G. Serazzi. ISSN:0163-5999.

In Springer Verlag Lecture Notes in Computer Science series

- [L16] M. Beccuti, L. Capra, M. De Pierro, G. Franceschinis and S. Pernice. *Deriving Symbolic Ordinary Differential Equations from Stochastic Symmetric Nets without unfolding*. In 15th European Performance Engineering Workshop (EPEW18), Spring LNCS, Octobre 29-30, 2018, Paris, France. (To be published)
- [L15] M. Beccuti, P. Cazzaniga, M. Pennis, D. Besozzi, M. S. Nobile, S. Perince, G. Russo, A. Tangherloni and F. Pappalardo. *GPU accelerated analysis of Treg-Teff cross regulation in relapsing-remitting multiple sclerosis*. In 24th International European Conference on Parallel and Distributed Computing (Euro-Par18), Spring LNCS, August 29-31, 2018, Turin, Italy (To be published)
- [L14] E. G. Amparore, S. Donatelli, M. Beccuti and A. Miner. *Decision Diagrams for Petri nets: a comparison of variable ordering algorithms*. In LNCS Transactions on Petri Nets and Other Models of Concurrency (ToPNoC), 2018. (To be published)
- [L13] E. G. Amparore, M. Beccuti and S. Donatelli. *Gradient-based variable ordering of Decision Diagrams for systems with structural units*. In 15th International Symposium on Automated Technology for Verification and Analysis (ATVA'17), Spring LNCS, Pages 184-200, October 3-6, 2017, Pune, India.
- [L12] P. Ballarini, M. Beccuti, E. Bibbona, A. Horvth, R. Sirovich and J. Sproton. *Analysis of Timed Properties Using the Jump-Diffusion Approximation*. In 14th European Performance Engineering Workshop (EPEW'17), Spring LNCS, Pages 69-84, September 7-8, 2017, Berlin, Germany.
- [L11] M. Beccuti, E. G. Amparore, S. Donatelli, D. Scheftelowitsch, P. Buchholz, and G. Franceschinis. *Markov Decision Petri Nets with Uncertainty*. In 12th European Workshop on Performance Engineering (EPEW'15), Spring LNCS, 31 August and 1 September, 2015, pages 177-192, Madrid, Spain.
ISBN: 978-3-319-23266-9 ISSN:0302-97430

- [L10] D. Duma, F. Cordero, M. Beccuti, G. Ciardo, T. J. Close and S. Lonardi. *Scribe: Ultra-Accurate Error-Correction of Pooled Sequenced Reads*. In 15th Workshop on Algorithms in Bioinformatics (WABI'15), Springer LNCS, September 10-12, 2015, pages 162-174, USA, Atlanta. ISBN:978-3-662-48220-9 ISSN:0302-9743
- [L9] M. Beccuti, E. Bibbona, A. Horvath, R. Sirovich, A. Angius and G. Balbo. *Analysis of Petri Net models through Stochastic Differential Equation*. In 35th International Conference on application and theory of Petri nets and other models of concurrency (ICATPN14), volume 8489 of Springer LNCS, June 23-27, 2014, pages 273-293, Tunis, Tunisia. ISBN:978-3-642-13674-0 ISSN:0302-9743
- [L8] E. G. Amparore, M. Beccuti and S. Donatelli. *(Stochastic) model checking in GreatSPN*. In 35th International Conference on application and theory of Petri nets and other models of concurrency (ICATPN14), volume 8489 of Springer LNCS, June 23-27, 2014, pages 354-363, Tunis, Tunisia. ISBN:978-3-642-13674-0 ISSN:0302-9743
- [L7] E. G. Amparore, P. Ballarini, M. Beccuti, S. Donatelli and G. Franceschinis. *Expressing and computing passage time measures of GSPN models with HASL*. In 34th International Conference on application and theory of Petri nets and other models of concurrency (ICATPN'13), volume 7927 of Springer LNCS, June 24-28, 2013, pages 110-129, Milano, Italy. ISBN:978-3-540-73093-4 ISSN:0302-9743
(Acceptance rate: 32%)
- [L6] M. Beccuti, V. Fragnelli, G. Franceschinis and S. Villa. *Dynamic simulations of kidney exchanges*. In International Conference on Operations Research (OR2010), Springer LNCS, September 1-3, 2010, pages 439-445, Munich, Germany. ISBN 978-3-642-20008-3 ISSN: 0721-5924
- [L5] G. Balbo, M. Beccuti, M. De Pierro and G. Franceschinis. *Stochastic Petri Nets sensitivity to token scheduling policies*. In International Conference on Operations Research (OR2010), Springer LNCS, September 1-3, 2010, pages 181-187, Munich, Germany. ISBN 978-3-642-20008-3 ISSN: 0721-5924
- [L4] J. Babar, M. Beccuti, S. Donatelli and A. Miner. *GreatSPN Enhanced with Decision Diagram Data Structures*. In 31st International Conference on application and theory of Petri nets and other models of concurrency (ICATPN'10), volume 6128 of Springer LNCS, pages 308-317. June 21-25, 2010 Braga, Portugal. ISBN:978-3-642-13674-0 ISSN:0302-9743
- [L3] M. Beccuti, A. Bottrighi, G. Franceschinis, S. Montani and P. Terenziani. *Modeling clinical guidelines through Petri Nets*. In 12th International Conference on Artificial Intelligence in Medicine (AIME'09), volume 5651 of Springer LNCS, pages 61-70. July 18-22, 2009, Verona, Italy. ISBN:978-3-642-02975-2 ISSN:0302-9743.

- [L2] M. Beccuti, G. Franceschinis, M. Kaaniche and K. Kanoun. *Multi-level dependability modeling of interdependencies between the Electricity and Information Infrastructures*. In 3rd International Workshop on Critical Information Infrastructures Security (CRITIS08), volume 5508 of LNCS, pages 48-59. October 13-15, 2008, Frascati (Rome), Italy ISBN:978-3-642-03551-7 ISSN:0302-9743.
- [L1] M. Beccuti, G. Franceschinis and S. Haddad. *Markov Decision Petri Net and Markov Decision Well-Formed Net Formalisms*. In 28th International Conference on application and theory of Petri nets and other models of concurrency (ICATPN'07), volume 4546 of LNCS, pages 43-62. June 25-29, 2007, Siedlce, Poland. ISBN:978-3-540-73093-4 ISSN:0302-9743
(Acceptance rate: 35%)

In Refereed Book Chapter:

- [B4] E. G. Amparore, G. Balbo, M. Beccuti, S. Donatelli and G. Franceschinis. *30 years of GreatSPN*. Chapter 4 in book *Principles of Performance and Reliability Modeling and Evaluation*. Editors Lance Fiondella and Antonio Puliafito. Ed. Springer Series in Reliability Engineering. 2016. ISBN-13:978-3319305974
- [B3] Beccuti, M., Chiaradonna, S., Di Giandomenico, F., Donatelli, S., Dondossola, G., Franceschinis, G. *Model-based evaluation of the impact of attacks to the telecommunication service of the electrical grid*. Chapter 14 in book *Cyber Behavior: Concepts, Methodologies, Tools, and Applications*. Editors Bologna S. and Theron P., Ed. IGI Global. 2014. DOI: 10.4018/978-1-4666-5942-1.ch084
- [B2] M. Beccuti, G. Franceschinis and Jeremy Sproston. *Modeling and verification of distributed systems using Markov decision processes*. Chapter 1 in book *Quantitative Assessments of Distributed Systems: Methodologies and Techniques*. Editors Dario Bruneo and Salvatore Distefano. Ed. Wiley. 2015. ISBN: 978-1-118-59521-3
- [B1] M. Beccuti, S. Chiaradonna, F. Di Giandomenico, S. Donatelli, G. Dondossola, G. Franceschinis. *A model based approach for the evaluation of cyber attacks to the electrical grid*. Chapter 14 in book *Model-Based Evaluation of the Impact of Attacks to the Telecommunication Service of the Electrical Grid*. Editors Sandro Bologna and Paul Theron. Ed. IGI Global. 2013. ISBN:578-1-4666-2964-6

In Proceeding of Refereed International Conferences/workshops:

- [P23] S. Pernice, M. Beccuti, P. Do', M. Pennisi, and F. Pappalardo. *Estimating Daclizumab effects in Multiple Sclerosis using Stochastic Symmetric Nets*. 2nd Int. Workshop on Computational Methods for the Immune System Function, (CMISF 2018) Madrid, Spain, December 3 - 6, 2018.
(To be published)
- [P22] N. Totis, A. Tangherloni, M. Beccuti, P. Cazzaniga, M. Nobile, D. Besozzi, M. Pennisi and F. Pappalardo. *GPU powered parameter estimation of a large-scale kinetic metabolic model*. Proceeding of 15th Int. Conference Computational Intelligence methods for Bioinformatics and Biostatistics (CIBB2018), Caparica, Portugal, September 6-8, 2018.
(To be published)
- [P21] E. G. Amparore, M. Beccuti, M. Botta, S. Donatelli, F. Tango. *Adaptive Artificial Co-pilot as Enabler for Autonomous Vehicles and Intelligent Transportation Systems*. Proceeding of 10th Int. Workshop on Agents in Traffic and Transportation (ATT 2018), CEUR Workshop Proceedings, Volume 2129, pp. 70-77, Stockholm, Sweden, July 14, 2018.
- [P20] G. Chiavassa, C. Fornari, R. Sirovich, M. Pennisi, M. Beccuti and F. Cordero. *A mathematical model to study breast cancer growth*. Proceeding of IEEE Int. Conference on Bioinformatics and Biomedicine (BIBM'17), pages 1438-1445 Kansas City, MO, USA, November 13-16, 2017.
- [P19] E. G. Amparore, S. Donatelli, M. Beccuti, G. Garbi and A. Miner. *Decision diagrams for Petri nets: which variable ordering?* Proceeding of International Workshop on Petri Nets and Software Engineering (PNSE'17), CEUR Workshop Proceedings, pp. 31-55, Zaragoza, Spain, June 26-27, 2017.
- [P18] N. Totis, M. Beccuti, F. Cordero, L. Follia, C. Riganti, F. Novelli and G. Balbo. *Dealing with indeterminism in biochemical networks*. Proceeding of International Workshop of the Italian group on Quantitative Methods in Informatics (InfQ 2016), ACM Digital Library, October 24-25, Taormina, Italy.
- [P17] E. G. Amparore, M. Beccuti, S. Collina, F. De Simone, S. Donatelli and F. Tango. *Cognitive Systems in Intelligent Vehicles. A new Frontier for Autonomous Driving*. Proceedings of 11th International Conference on Informatics in Control, Automation and Robotics (ICINCO14), pages 817-822, Vienna, Austria, 1-3 September, 2014.
- [P16] E. G. Amparore, B. Barbot, M. Beccuti, S. Donatelli and G. Franceschinis. *Simulation-based Verification of Hybrid Automata Stochastic Logic Formulas for Stochastic Symmetric Net models*. Proceedings of ACM SIGSIM Conference on Principles of Advanced Discrete Simulation (PADS13), pages 253-264, Montreal, Canada, 19-22 May, 2013. ISBN: 978-1-4503-1920-1

- [P15] M. Beccuti and G. Franceschinis. *Efficient simulation of Stochastic Well-Formed Nets through symmetry exploitation*. Proceedings of Winter Simulation Conference (WSC12), pages 296-296, Berlin, Germany, 9-12 December, 2012.
- [P14] M. Beccuti, A. Bobbio, G. Franceschinis and R. Terruggia. *A new symbolic approach for network reliability analysis*. Proceedings of 42nd Annual IEEE/IFIP International Conference on Dependable Systems and Networks (DSN 2012), Boston, Massachusetts, USA, 25-28 June, 2012. ISBN: 978-1-4673-1624-8
- [P13] E. G. Amparore, M. Beccuti, S. Donatelli and G. Franceschinis. *Probe Automata for Passage Time Specification*. Proceedings of 8th International Conference on Quantitative Evaluation of Systems (QEST11), pages 101-110, Aachen, Germany, September 2011. IEEE Computer Society Press. ISBN:978-1-4577-0973-9
- [P12] M. Beccuti, A. Horvart, A. Horvath, M. De Pierro and K. Farkas. *A Mean Field Based Methodology for Modeling Mobility in Ad Hoc Networks*. Proceedings of the 73rd International Conference on IEEE Vehicular Technology Conference (VTC2011-Spring), pages 1-5. Budapest, Hungary, May 2011. ISBN:978-1-4244-8331-0
- [P11] G. Balbo, M. Beccuti, M. De Pierro and G. Franceschinis. *Computing First Passage Time Distributions in Stochastic Well-Formed Nets*. Proceedings of International Conference on Performance Engineering (ICPE'11), pages 7-18, Karlsruhe, Germany, March 14-16, 2011. ISBN:978-1-4503-0519-8
(Acceptance rate: 30%)
- [P10] M. Beccuti, D. Codetta-Raiteri and G. Franceschinis. *Multiple abstraction levels in performance analysis of WSN monitoring systems*. Proceedings of the 1st International Workshop on Performance Methodologies and Tools for Wireless Sensor Networks (WSNPerf - VALUETOOLS), pages 73-83, Pisa, Italy, ACM Digital Library, October 2009. ISBN: 978-963-9799-70-7
(Acceptance rate: 36%)
- [P9] S. Baarir, M. Beccuti, C. Dutheillet and G. Franceschinis. *From partially to fully lumped Markov chains in Stochastic Well Formed Petri Nets*. Proceedings of the 4th International Conference on Performance Evaluation, Methodologies and Tools (VALUETOOLS), pages 43-53, Pisa, Italy, ACM Digital Library, October 20-22, 2009. ISBN: 978-963-9799-70-7
(Acceptance rate: 36%)
- [P8] M. Beccuti, D. Codetta-Raiteri, G. Franceschinis and S. Haddad. *Parametric NdRFT for the derivation of optimal repair strategies*. Proceeding of the 39th International Conference on Dependable Systems and Networks (DSN-2009), pages 399-408, Estoril, Lisbon, Portugal, 29

June-2 July 2009. IEEE Computer Society Press.
ISBN:978-963-9799-31-8
(**Acceptance rate:** 27%)

- [P7] M. Beccuti, G. Franceschinis, S. Donatelli, S. Chiaradonna, F. Di Gian-domenico, P. Lollini, G. Dondossola and F. Garrone. ***Quantification of Dependencies in Electrical and Information Infrastructures: the CRUTIAL approach.*** Proceedings of the 4th International Conference on Critical Infrastructures (CRIS), pages 1-8, Linkoping, Sweden, 28-30 April 2009. IEEE Computer Society Press.
ISBN: 978-1-4244-4636-0
- [P6] M. Beccuti, D. Codetta-Raiteri, G. Franceschinis and S. Haddad. ***Non deterministic Repairable Fault Trees for computing optimal repair strategy.*** Proceedings of the 3rd International Conference on Performance Evaluation, Methodologies and Tools (VALUETOOLS), pages 1-10, Athens, Greece, ACM Digital Library, October 2008.
ISBN: 978-963-9799-31-8
- [P5] M. Beccuti, G. Franceschinis, M. Kaaniche and K. Kanoun. ***Multi-level dependability modeling of interdependencies between the Electricity and Information Infrastructures.*** Proceedings of 3rd International Conference on Critical Information Infrastructures Security (CRITIS), pages 109-124, Roma, Italy, October 2008.
ISBN: 978-3-642-03551-7
- [P4] S. Baair, M. Beccuti and G. Franceschinis. ***New solvers for asymmetric systems in GreatSPN.*** Proceedings of the 5th International Conference on the Quantitative Evaluation of SysTems (QEST08) pages 235-236, St Malo, France, 14th-17th September 2008. IEEE Computer Society Press.
ISBN: 978-0-7695-3360-5.
- [P3] M. Beccuti, D. Codetta-Raiteri, G. Franceschinis and S. Haddad. ***A framework to design and solve Markov Decision Well-formed Net models.*** Proceedings of the 4th International Conference on Quantitative Evaluation of SysTems (QEST07), pages 165-166, Edinburgh, Scotland, 16th-19th September 2007. IEEE Computer Society Press.
ISBN: 0-7695-2883-X
(**Acceptance rate:** 35%)
- [P2] M. Beccuti, S. Baair, G. Franceschinis, J-M. Iliè. ***Efficient lumpability check in partially symmetric systems.*** Proceedings of the 3rd International Conference on Quantitative Evaluation of Systems (QEST06), pages 211-221 Riverside, CA, USA, September 2006. IEEE Computer Society Press.
ISBN: 0-7695-2665-9
- [P1] J.M. Iliè, S. Baair, M. Beccuti, C. Delamare, S. Donatelli, C. Dutheillet, G. Franceschinis, R. Gaeta and P. Moreaux. ***Extended SWN Solvers***

in GreatSPN. Proceedings of the 1st International Conference on Quantitative Evaluation of Systems (Qest04), pages 324-325 Enschede, Netherlands. September 27-30 2004, IEEE Computer Society Press.
ISBN: 0-7695-2185-1
(**Acceptance rate:** 34%)

In refereed international conferences/workshops:

- [C11] F. Cordero, M. Beccuti, E. Genuardi, G. Romano, R. A. Calogero, M. Ladetto and S. Ferrero. *HashClone: a new tool to quantify the minimal residual disease during patient follow-up*. International Annual Meeting of the Bioinformatics Italian Society, June 15-17, 2016, Salerno, Italy.
- [C10] G. Miglio, A. Roman, A. Sabatino, F. Cordero, M. Beccuti, M.T. Giraud, E. Veglia and R. Fantozzi. *The Mode of Action of Dimethyl Fumarate: Protein Succination and AntiPyroptotic Effects*. International workshop Pharmacology 2014, London, England, December 2014. Proceedings of the British Pharmacological Society.
- [C9] Giulio Ferrero, Valentina Miano, Gianfranco Balbo, Michele De Bortoli, Marco Beccuti and Francesca Cordero. *Integrative strategies for omics data: ERalpha cistrome and epigenome case-study*. International Workshop NETTAB 2014, Torino, Italy, October 2014.
- [C8] Stefano Lonardi, Denisa Duma, Matthew Alpert, Francesca Cordero, Marco Beccuti, Prasanna R. Bhat, Yonghui Wu, Gianfranco Ciardo, Burair Alsaihati, Yaqin Ma, Steve Wanamaker, Josh Resnik and Timothy J. Close. *Sequences of 14,600 Gene-Bearing Minimal Tiling Path BACs of Morex Barley*. International conference for the Plant and Animal Genome, San Diego, California, January, 2012.
- [C7] R. Calogero, F. Cordero, M. Beccuti, S. Donatelli and M. Arigoni. *Dissecting a massive parallel sequencing workflow for quantitative miRNA expression analysis*. International conference on Intelligent Systems for Molecular Biology (ISMB11), Vienna, Austria, July 2011.
- [C6] M. Beccuti, S. Donatelli, G. Franceschinis and R. Terruggia. *A new symbolic approach for network reliability analysis*. Workshop on Performance Evaluation and Reliability of Complex Systems in Quantitative Informatic meeting (InfQ11), Lipari, Italy, July 2011.
- [C5] M. Beccuti, V. Fragnelli, G. Franceschinis, S. Villa. *Dynamic simulations of kidney exchanges*. International Conference on Operations research (OR) Munich, Germany, September 2010.
- [C4] G. Balbo, M. Beccuti, M. De Pierro and G. Franceschinis. *On the importance of token scheduling policies in Stochastic Petri nets*. International Conference on Operations research (OR) Munich, Germany, September 2010.
- [C3] M. Beccuti, S. Donatelli, R.A. Calogero and F. Cordero. *DSgen: a tool to generate SOLiD and ILLUMINA synthetic NGS datasets to*

test mapping tools behavior. 7th Annual General Meeting of the Italian Bioinformatics Society 14-16 April 2010, Bari (IT).

[C2] F. Cordero, M. Beccuti, Susanna Donatelli and R.A. Calogero. *SeqMDD: efficient and exhaustive sequence mapping in color and nucleotide space exploiting symbolic data structures*. International Conference of System Biology and New Sequencing Technologies Center for Genomics Regulation (CRG) June 16-18 2010, Barcelona, Spain.

[C1] M. Beccuti. *Efficient lumpability check in partially symmetric system*. In Doctoral Consortium, satellite event of ACSD'06 and ICATPN'06, Turku, Finland, June 26-30, 2006.

Participation in committees

- Program Committee member of the International Workshop on New Frontiers in Quantitative Methods in Informatics (InfQ2016), Taormina, Italy, October 24-25, 2016.
- Program Committee member of the International Workshop on New Frontiers in Quantitative Methods in Informatics (InfQ2017), Venezia, Italy, December 5-7, 2017.
- Program Committee member of the International Workshop on New Frontiers in Quantitative Methods in Informatics (InfQ2018), Milano, Italy, October 24-25, 2018.

- Program Committee member of the 2nd International Workshop on Sustainable Data Centers and Cloud Computing, Shanghai, China. December 6-9, 2016.

- Program Committee member of the 34th International Conference on Application and Theory of Petri Nets and Concurrency, Milano, Italy. June 25-29, 2013.
- Program Committee member of the 35th International Conference on Application and Theory of Petri Nets and Concurrency, Tunis, Tunisia, June 23-27, 2014.
- Program Committee member of the 36th International Conference on Application and Theory of Petri Nets and Concurrency, Belgium, Brussels, June 21-26, 2015.

- Tool Board member of the Model Checking Contest at International Conference on Application and Theory of Petri Nets and Concurrency, Tunis, Tunisia, June 24 2014.

- Tool Board member of the Model Checking Contest at International Conference on Application and Theory of Petri Nets and Concurrency, Belgium, Brussels, June 24 2015.
 - Tool Board member of the Model Checking Contest at International Conference on Application and Theory of Petri Nets and Concurrency, Torun, Poland, June 21 2016.
 - Tool Board member of the Model Checking Contest at International Conference on Application and Theory of Petri Nets and Concurrency, Zaragoza, Spain, June 27 2017.
-
- Organizing Committee member of the 22nd International Conference on Parallel Distributed network-based Processing (PDP14), Torino, Italy, 12-14 February 2014.
-
- Program Committee member of the Special Session on *Advances in High-Performance Bioinformatics, Systems and Synthetic Biology* in the 23rd International Conference on Parallel Distributed network-based Processing (PDP15), Turku, Finland, March 4-6 , 2015.
 - Program Committee member of the Special Session on *Advances in High-Performance Bioinformatics, Systems and Synthetic Biology* in the 25rd International Conference on Parallel Distributed network-based Processing (PDP17), St. Petersburg, Russia, March 6-8, 2017.
 - Program Committee member of the Special Session on *High Performance Computing in Modelling and Simulation* in the 26rd International Conference on Parallel Distributed network-based Processing (PDP18), Cambridge, UK, 6-8 March 2018.
 - Program Committee member of the Special Session on *High Performance Computing in Modelling and Simulation* in the 27th International Conference on Parallel Distributed network-based Processing (PDP19), Pavia, Italy, 13-15 February 2019.
-
- Publicity chair of 4th international workshop on Data Center Performance, Madrid, Spain, June 30 - July 3, 2014.
 - Program Committee member of the 4th International workshop on Data Center Performance, Madrid, Spain, June 30 - July 3, 2014.
-
- Organizing Committee member of the 32nd International Symposium on Computer Performance, Modelling, Measurements and Evaluation, Torino, Italy, 7-9 October, 2014.

- Program Committee member of the 6th International Workshop on Biological Processes & Petri Nets (BioPPN 2015), Brussels, Belgium 21-26 June, 2015.
- Program Committee member of the 7th International Workshop on Biological Processes & Petri Nets (BioPPN 2016), Torun, Poland. 19-24 June, 2016.
- Program Committee member of the 7th International Conference on Data Communication Networking (DCNET 2016), Lisbon, Portugal. June 26-28, 2016.
- Program Committee member of the 8th International Conference on Data Communication Networking (DCNET 2017), Madrid, Spain. June 24-26, 2017.
- Program Committee member of the 9th International Conference on Data Communication Networking (DCNET 2018), Porto, Portugal. June 26-28, 2018.
- Program Committee member of 15th European Performance Engineering Workshop (EPEW'18), Paris, France , October 29-30 2018.
- Program Committee member of 2nd International Workshop on Computational Methods for the Immune System Function (CMISF 2018), Madrid, Spain, December 3-6 2018.
- Reviewer board member of International Journal of Artificial Intelligence, Neural Networks, and Complex Problem-Solving Technologies: Applied Intelligence. E.d. Springer (From 2012 To 2018).
(**Impact Factor**:1.853)

Organization of Conferences, workshops and special sections:

- Co-chair of workshop *Advances in High-Performance Bioinformatics, Systems Biology* in the 24th International European Conference on Parallel and Distributed Computing (Euro-Par2 018), Turin, Italy, 27-31 August, 2018.

- General workshop Co-chair in the annual meeting of the Bioinformatics Italian Society (BITS2018), Turin, Italy, June 27-29, 2018.
- Workshop Co-chair of *Exploiting Docker for reproducibility in bioinformatics analysis* workshop in the annual meeting of the Bioinformatics Italian Society (BITS2018), Turin, Italy, June 27-29, 2018.
- Co-organizer of the national workshop *First Piedmont Bioinformatic Day*, Turin, Italy, 22 September 2016.
- Co-chair of the Special Session on *Advances in High-Performance Bioinformatics, Systems and Synthetic Biology* in the 22nd International Conference on Parallel Distributed network-based Processing (PDP14), Torino, Italy, 12-14 February 2014.
- Co-chair of the Special Session on *Advances in High-Performance Bioinformatics, Systems and Synthetic Biology* in the 26th International Conference on Parallel Distributed network-based Processing (PDP18), Cambridge, UK, 6-8 March 2018.
- Co-chair of the Special Session on *Advances in High-Performance Bioinformatics, Systems and Synthetic Biology* in the 27th International Conference on Parallel Distributed network-based Processing (PDP19), Pavia, Italy, 13-15 February 2019.
- Co-chair of the Special Session on *Modelling and Simulation of Large Complex Systems* in the 16th IEEE International Conference on Scalable Computing and Communications, Toulouse, France, 18-21 July 2016.

Instructor in International Tutorials and Workshops

- Instructor of the course *RNA-seq analysis* in the RNA-seq Workshop, Dept. Clinical and Biological Sciences, Molecular Biotechnology Center, Torino, Italy, April 2013.
- Instructor of the course *advanced RNA-seq analysis* in the RNA-seq Workshop, Dept. Clinical and Biological Sciences, Molecular Biotechnology Center, Torino, Italy, April 2014.
- Instructor of the course *advanced NGS data analysis* in Jagiellonian University Medical College, Faculty of Medicine, Krakow, Poland, November 2014.
- Instructor of the course *advanced NGS data analysis* in University of Turin, Dept. Clinical and Biological Sciences, Turin, Italy.
Dates: (1)April 2015; (2)April 2016 (3)April 2017; (4) 26-30 March 2018.
- Instructor of the course *Whole Transcriptome Data Analysis* in European Molecular Biology Laboratory (EMBL), Heidelberg , Germany.
Dates: (1)28 June-1 July 2016; (2)3-7 October 2016; (3)5-9 June 2017; (4)3-6 October 2017; (5)4-8 June 2018; (6)7-11 October 2018.

- Instructor of the course *RNA sequencing* in Fondazione Istituto Italiano di Tecnologia (IIT), Genova, Italy, , 5-9 February 2018.
- Instructor of the course *Transcriptome Data Analysis* for the Doctoral School in Life and Health Sciences at University of Verona, Verona, Italy, 4-6 September 2017.

Honors and awards

- Invited to Schloss Dagstuhl in Wadern, Germany. Dagstuhl Seminar 14481 *Multiscale Spatial Computational Systems Biology*, 24-28 November, 2014.
- Article “*A physical, genetic and functional sequence assembly of the barley genome*” is recognized by Web of Science as an Highly Cited Paper, top 1% in Molecular Biology and Genetics for the publication Nature;
- Article “*Quantification of dependencies between electrical and information infrastructures*” is recognized by ScienceDirect as one of the Top downloaded 25 papers published in International Journal of Critical Infrastructure Protection (Ed. Elsevier) in 2012;
- Article “*Quantification of dependencies between electrical and information infrastructures*” is one of the most cited International Journal of Critical Infrastructure Protection Articles since 2009 (extracted from Scopus).
- Committee member of Doctoral School of Sciences and Innovative Technologies (in Computer science), University of Turin, 2016.
- Invite scientist for the workshop *RNA sequencing*, 5-9 February 2018, Fondazione Istituto Italiano di Tecnologia (IIT), Genova.

Invited speakers/lectures

- **Invited speaker:** *SeqMDD: exhaustive sequence mapping exploiting symbolic data structure*. In Workshop on Massive Parallel Sequencing. Molecular Biotechnology center, Torino, Italy. 8 March 2011.
- **Invited speaker:** Mathematical models on cancer progression. In 5th International Workshop on Biological Processes & Petri Nets (BioPPN 2014) Tunis, Tunisia, 23 June 2014.
- **Invited lecture:** *State-of-the-Art Fusion-Finder Algorithms: sensitivity and specificity*. In Omicron European FP7 project, Jagiellonian University Medical College, Faculty of Medicine, Krakow, Poland, November 2014.
- **Invited lecture:** *Decision Diagrams to Encode and Manipulate Large Structured Data* at Faculty of Computing in University of King Abdulaziz Rabid, Saudi Arabia, 28 January, 2013.
- **Invited lecture:** *Modelling and Simulation of Biological Systems* at Computer, Electrical and Mathematical Science and Engineering Division of King Abdullah University of Science and Technology (KAUST), Thuwal, Saudi Arabia, 30 January, 2013.

- **Invited lecture:** *Whole Transcriptome Data Analysis*. In European Molecular Biology Laboratory, Heidelberg, Germany, 28 June-1 July, 2016.
- **Invited lecture:** *Mathematical models on Systems Biology*. In IBM Research, Zurich, Switzerland 24 May 2017.
- **Invited lecture:** *Precision medicine: from deep sequencing data to mathematical models*. In Department of Biotechnology at Università degli Studi di Verona. September 2015.
- **Invited lecture:** *Analysis of biological systems by hybrid switching jump diffusion*. In Department of Computer Science at Univ. of Pisa. March 2018.

Participation in research projects

Principal Investigator

Project title: Experimentation and study of models for the evaluation of the performance and the energy efficiency for the Competence Center for Scientific Computing at the University of Turin (supported by CRT foundation).

Start date of the project: 13/03/2017

Duration: 24 months

This project aims to study the performance of the new Scientific Computing center (C3S) of the University of Turin through measurement campaigns and suitable formal models, creating a series of ad-hoc tools with which to analyze and develop strategies to enable load distribution to increase performance and reliability while reducing operating costs and the impact environmental. A distinctive feature of this project will be the creation and calibration of the model through the experimental data obtained by the realization of a measurement and monitoring infrastructure for C3S.

Thematic Research Group Leader

Project title: High Performance Modelling and Simulation for Big Data application (cHIPSet - COST Action n. IC1406).

Start date of the project: 08/04/2015

Duration: 36 months

The Action will share best practices and research on novel data-aware programming models for parallel computing with a specific focus on simulation workloads. A key goal of the activity is to support both code and performance portability across different HPC platforms for problems requiring the management of massive data.

Researcher

Project title: Holistic Human Factors and System Design of Adaptive Cooperative Human-Machine Systems (European ARTEMIS-2012ASP8).

Start date of the project: 01/10/2013

Duration: 36 months

HOLIDES addresses the development and qualification of Adaptive Cooperative Human-Machine Systems (AdCoS) that are urgently needed to

enhance usability and safety as well as to boost the confidence of human operators. HOLIDES will therefore develop a Human Factors Reference Technology Platform (HF-RTP) to foster interoperability and to support human factors along the whole engineering lifecycle.

Project title: Parallel Patterns for Adaptive Heterogeneous Multicore Systems (European FP7- 288570).

Start date of the project: 01/10/2011

Duration: 36 months

ParaPhrase project aims to produce a new structured design and implementation process for heterogeneous parallel architectures, where developers exploit a variety of parallel patterns to develop component based applications that can be mapped to the available hardware resources, and which may then be dynamically re-mapped to meet application needs and hardware availability.

Project title: Advanced Methodologies for the Analysis and management of the Future Internet (supported by Compagnia di San Paolo foundation).

Start date of the project: 01/01/2012

Duration: 36 months

<http://amalfi.di.unito.it/index.html>

The goal of the project is to extend and improve existing mathematical methods (based on stochastic processes, diffusion approximations, decomposition, aggregation, copulas, temporal logics, game theory, compressive sensing, network coding) to develop advanced frameworks, methodologies and tools for approaching the analysis and management of novel architectures proposed for “Future Internet” (FI). Our methodologies, designed to address the very large scale and complex models deriving from these architectures and validated by realistic simulations, will help to select, configure and manage services and applications paving the way to FI.

Project title: Advancing the Barley Genome (CRIS NUMBER: 0218967).

Start date of the project: 01/09/2009

Duration: 36 months

<http://www.reeis.usda.gov/web/crisprojectpages/218967.html>

The goal of this new project, through accomplishment of short-term gene sequencing and physical map-related goals, is to further facilitate marker-assisted breeding by greatly improving access to knowledge of barley genes. As a corollary, the information developed from this project also will accelerate map-based cloning efforts, which also lead to improved markers as well as alter.

Project title: Wireless Sensor Networks for Dependable Monitoring of Critical Applications (MIUR-PRIN).

Start date of the project: 01/10/2008

Duration: 24 months

The project aims to investigate innovative solutions for the application of WSN networks to the realization of monitoring systems for safety critical applications. This objective is pursued by means of the integration of two complementary research lines: a technological line aimed to develop solu-

tions for the efficient management of the network resources and to increase its quality of service and lifetime; a methodological line aimed to develop modelling and quantitative evaluation techniques that make the reliability figures predictable and support efficient management strategies.

Project title: Performance Evaluation of Complex System: Techniques, Methodologies and Tools (MIUR-FIRB).

Start date of the project: 01/11/2006

Duration: 36 months

This Project focuses on the foundations of performance evaluation with the aim of developing new techniques, methodologies and tools for the analysis of the complex systems driving the Information Society. The topics addressed within the Project encompass all the aspects of performance evaluation, from measurement and characterization techniques, to formalisms for the qualitative and quantitative modeling of complex systems, to solution methods for analytical, numerical and simulation models.

Project title: CRITICAL UTILITY InfrastructurAL resilience (European IST research project 2006-2009).

Start date of the project: 01/01/2006

Duration: 39 months

This project is an European IST research project approved from the EU within the Sixth Framework Program (FP6). The project addresses new networked ICT system for the management of the electric power grid, in which artefacts controlling the physical process of electricity transportation need to be connected with information infrastructures, through corporate networks, which are in turn connected to the Internet.