

# Curriculum Vitae

Dott. Marco Beccuti  
Dipartimento Informatica  
Università degli studi di Torino  
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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:** Associate Professor at the Dep. of Computer Science in the Università degli Studi di Torino.

## Research interests

His research is currently mainly focused on computational modeling and simulation of complex systems. In particular he is interested in:

- Stochastic and hybrid modeling languages;
- Exact and approximated techniques to analysis the behavior of complex systems;
- Applications to computational Systems Biology.

Moreover he works on design of bioinformatics algorithms and workflows for the analysis of deep sequencing data (i.e. genomic, transcriptomic and single cell data) with particular emphasis on reproducibility aspects.

## Education

- *21<sup>st</sup> 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).

- *16<sup>th</sup> 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

- *November 2020-today.* Associate professor at the Department of Computer Science in the Università degli Studi di Torino.
- *Spetember 2020-today.* Scientific Coordinator of the laboratory “HPC for biomed and AI” in ICxT
- *April 2020-today.* Referent of InfoLife laboratory for the Task Force COVID-19 of CINI (National Interuniversity Consortium for Informatics).
- *April 2020-today.* Member of the working group on “epidemiological modelling for COVID-19 outbreak” of Piedmont Regional Emergency Task Force.
- *January 2019-today.* Instructors of ELIXIR-IIB courses. (<https://elixir-iib-training.github.io/website/trainers/>).
- *January 2019-today.* Technical Coordinator of ELIXIR Node at the Università degli Studi di Torino.
- *October 2018-today.* Ordinary Member of Bioinformatics Italian Society (BITS).
- *November 2017-October 2020* 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.
- *7<sup>th</sup> - 22<sup>th</sup> 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, ABB Corporate Research, Zurich, Switzerland.
- Prof. Pietro Lio', Department of Computer Science and Technology, the University of Cambridge.

## Teaching

### **Bioinformatics course :**

3 CFU - 24 course hours (corso di Biologia - Univ. degli Studi di Torino.)  
*A.A. 2020/2019, 2018/2019.*

### **Bioinformatics course :**

1 CFU - 8 course hours (corso di Biologia ed Informatica - Univ. degli Studi di Torino.)  
*A.A. 2017/2018.*

### **Bioinformatics course :**

1 CFU - 8 course hours (corso di Informatica - Univ. degli Studi di Torino.)  
*A.A. 2019/2018.*

### **Bioinformatics course :**

1/2 CFU - 4 course hours (corso di Informatica - Univ. degli Studi di Torino.)  
*A.A. 2020/2019.*

### **RNA sequence analysis course:**

24 course hours (Master in Bioinformatics and functional genomics - Univ. degli Studi di Milano)  
*A.A. 2018/2019, 2017/2018.*

### **Elaborazione Informatica dei Dati Sperimentali course:**

4CFU - 32 course hours (corso di Biologia - Univ. degli Studi di Torino.)  
*A.A. 2020/2019, 2018/2019, 2017/2018, 2016/2017, 2015/2016, 2014/2015, 2013/2014.*

**NGS data analysis: computational aspects.**

20 course hours (Doctoral School in Life and Health Sciences - Univ. degli Studi di Torino.)

A.A. 2018/2019, 2017/2018, 2016/2017, 2015/2016.

**Programming for data science course:**

3CFU - 25 course hours (Master of Stochastics and Data Science - Univ. degli Studi di Torino.)

A.A. 2020/2019, 2018/2019, 2017/2018, 2016/2017, 2015/2016.

**Qualitative and probabilistic system verification**

20 course hours (Doctoral School in Computer Science - Univ. degli Studi di Torino.)

A.A. 2017/2018, 2016/2017, 2015/2016, 2014/2015.

**Informatica course:**

6CFU - 48 course hours (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:**

6CFU - 44 course hours (corso di laurea in Giurisprudenza - Univ. del Piemonte Orientale.)

A.A. 2011/2012, 2010/2011, 2009/2010.

**Programmazione:**

6 CFU - 44 course hours (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:**

[J42(2022)] L. Alessandri, F. Cordero, M. Beccuti, N. Licheri, M. Arigoni, M. Olivero, M.F. Di Renzo, A. Sapino, R.A. Calogero. *Sparsely-connected autoencoder (SCA) for single cell RNAseq data mining*. Systems Biology and Applications, Volume 7, Issue 1, Article number: 1 (2021). ISSN: 2056-7189

(**Impact Factor:** - SJR: 3.813 Q1 in Computer Science Applications)

[J41(2020)] S. Pernice, L. Follia, A. Maglione, M. Pennisi, F. Pappalardo, F. Novelli, M. Clerico, M. Beccuti, F. Cordero, S. Rolla. *Computational*

*modeling of the immune response in multiple sclerosis using epidemiological framework*. BMC Bioinformatics, Volume 21, Article number: 550 (2020).  
ISSN:1471-2105  
(**Impact Factor:** 3.242 - SJR: Q1 in Computer Science Applications)

[J40(2020)] S. Pernice, P. Castagno, L. Marcotulli, M. M. Maule, L. Richiardi, G. Moirano, M. Sereno, F. Cordero and M. Beccuti. *Impacts of reopening strategies for COVID-19 epidemic: a modeling study in Piedmont region*. BMC Infectious Diseases, Volume 20, Article number: 798 (2020).  
ISSN: 1471-2334  
(**Impact Factor:** 2.96 - SJR: Q1 in Infectious Diseases)

[J39(2020)] P. Castagno, S. Pernice, G. Ghetti, M. Povero, L. Pradelli, D. Paolotti, G. Balbo, M. Sereno and M. Beccuti. *A computational framework for modeling and studying pertussis epidemiology and vaccination*. BMC Bioinformatics, Volume 21, 16 September 2020, Page 344.  
ISSN:1471-2105  
(**Impact Factor:** 3.242 - SJR: Q1 in Computer Science Applications)

[J38(2020)] G. Ferrero, N. Licheri, L.C. Tarrero, C. De Intinis, V. Miano, R.A. Calogero, F. Cordero, M. De Bortoli, and M. Beccuti. *Docker4circ: A framework for the reproducible characterization of circRNAs from RNA-seq data*. International Journal of Molecular Sciences, Volume 21, Issue 1, 1 January 2020, Article number 293.  
ISSN:1661-6596  
(**Impact Factor:** 4.556 - SJR: Q1 in Computer Science Applications)

[J37(2019)] S. Pernice, M. Pennisi, G. Romano, A. Maglione, S. Cutrupi, F. Pappalardo; G. Balbo; M. Beccuti, F. Cordero and R.A. Calogero. *A computational approach based on the Colored Petri Net formalism for studying Multiple Sclerosis*. BMC Bioinformatics, Volume 20, 10 December 2019, Article number 623  
  
ISSN:1471-2105  
(**Impact Factor:** 2.61 - SJR: Q1 in Computer Science Applications)

[J36(2019)] S. Pernice, L. Follia, G. Balbo, L. Milanese, G. Sartini, N. Totis, P. Lió I. Merelli, F. Cordero and M. Beccuti. *Integrating Petri nets and Flux Balance methods in computational biology models: a methodological and computational practice*. Fundamenta Informaticae, Volume 171, Issue 1-4, 2019, Pages 367-392  
ISSN:0169-2968  
(**Impact Factor:** 1.298 - SJR: Q3 in Theoretical Computer Science)

- [J35(2019)] L. Alessandrì, F. Cordero, M. Beccuti, M. Arigoni, M. Olivero, G. Romano, S. Rabellino, N. Licheri, G. De Libero, L. Pace, R.A. Calogero. *rCASC: reproducible classification analysis of single-cell sequencing data*. Gigascience, Volume 8, Issue 9, September 2019.  
ISSN:2047-217X  
(**Impact Factor:** 7.267 - SJR: Q1 in Computer Science Applications)
- [J34(2019)] L. Follia, G. Ferrero, G. Mandili, M. Beccuti, D. Giordano, R. Spadi, M. A. Satolli, A. Evangelista, H. Katayama, W. Hong, A. A. Momin, M. Capello, S. M. Hanash, F. Novelli and F.Cordero. *Integrative analysis of novel metabolic subtypes in pancreatic cancer fosters new prognostic biomarkers*. Frontiers in Oncology, Volume 9, Issue FEB, Article number 115, 2019,  
ISSN:2234-943X  
(**Impact Factor:** 4.416 - SJR: Q1 in Oncology)
- [J33(2019)] N. Kulkarni, L. Alessandrì, 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 - SJR: Q1 in Computer Science Applications)
- [J32(2018)] 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 - SJR: Q1 in Oncology)
- [J31(2018)] 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 SJR: Q3 in Physical and Theoretical Chemistry)
- [J30(2018)] 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 - SJR: Q1 in Computational Theory and Mathematics)

[J29(2017)] M. Beccuti, E. Genuardi, G. Romano, L. Monitillo, D. Barbero, M. Boccadoro, M. Ladetto, R. A. Calogero, S. Ferrero and F. Cordero. *HashClone: 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 - SJR: Q1 in Computer Science Applications)

[J28(2017)] 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 - SJR: Q1 in Multidisciplinary)

[J27(2017)] 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 - SJR: Q1 in Biochemistry, Genetics and Molecular Biology)

[J26(2017)] 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*. Performance Evaluation Review, Volume 44(4) Pages 91-102, 2017. ACM New York, NY, USA.

ISSN:0163-5999

( SJR: Q2 in Software)

[J25(2016)] E. G. Amparore, G. Balbo, M. Beccuti, S. Donatelli and G. Franceschinis. *30 years of GreatSPN*. Ed. Springer Series in Reliability Engineering, Editors Lance Fiondella and Antonio Puliafito, 2016. ISBN-13:978-3319305974

ISSN:1614-7839

( SJR: Q4 in Safety, Risk, Reliability and Quality)

[J24(2016)] 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 - SJR: Q1 in Immunology)

[J23(2016)] G. Miglio, A. D. Sabatino, E. Veglia, M. T. Giraudo, M. Beccuti, F. Cordero. *A computational analysis of S-(2-succino)cysteine sites in proteins*. Biochimica et Biophysica Acta - Proteins and Proteomics, Elsevier Press., volume 1864(2), 2016  
ISSN:1570-9639  
(**Impact Factor:** 3.127 - SJR: Q1 in Biophysics)

[J22(2015)] 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 - SJR: Q1 in Cell Biology)  
ISI Journal Citation Reports Ranking: 2014: 10/200 (Plant Sciences).

[J21(2015)] 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 - SJR: Q1 in Computer Science)

[J20(2015)] 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 - SJR: Q1 in Modelling and Simulation)

[J19(2015)] 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 - SJR: Q1 in Computer Science Applications)

[J18(2015)] 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 - SJR: Q1 in Biochemistry, Genetics and Molecular Biology)

[J17(2015)] M. Beccuti, C. Fornari, G. Franceschinis, S. M. Halawani, O. Barukab, A. Ahmad, G. Balbo. *From Symmetric Nets to Differential Equations exploiting Model Symmetries*. Computer Journal, Oxford University Press., Volume 58, Issue 1, Jan. 2015, Pages 23-39.

ISSN:0010-4620

(**Impact Factor:** 0.888 - SJR: Q2 in Computer Science)

[J16(2014)] 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 - SJR: Q1 in Biochemistry, Genetics and Molecular Biology)

[J15(2014)] 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 - SJR: Q1 in Computational Theory and Mathematics)

[J14(2014)] M. Beccuti, G. Franceschinis, D. Codetta-Raiteri and S. Haddad. *Computing Optimal Repair Strategies by means of NdRFT Modelling and Analysis*. Computer Journal, Oxford University Press., Volume 57, Issue 12, Dec.2014, Pages 1870-1892.

ISSN:0010-4620

(**Impact Factor:** 0.888 - SJR: Q1 in Computer Science)

[J13(2013)] 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(2013)] 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 - SJR: Q1 in Modelling and Simulation)

- [J11(2013)] 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 - SJR: Q1 in Computer Science Applications)
- [J10(2013)] 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 - SJR: Q1 in Computer Science Applications)
- [J9(2013)] 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:23146141 - - DOI: <http://dx.doi.org/10.1155/2013/340620>  
(**Impact Factor:** 2.436 - SJR: Q1 in Medicine)
- [J8(2012)] 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 - SJR: Q1 in Multidisciplinary)
- [J7(2012)] 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 - SJR: Q2 in Computer Science Applications)
- [J6(2012)] 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 - SJR: Q1 in Biochemistry, Genetics and Molecular Biology)
- [J5(2012)] 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 - SJR: Q1 in Medicine)

- [J4(2011)] 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.  
(SJR: Q2 Safety, Risk, Reliability and Quality)
- [J3(2011)] 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 - SJR: Q1 in Software)
- [J2(2010)] G. Balbo, M. Beccuti, M. De Pierro and G. Franceschinis. *First Passage Time Computation in Tagged GSPNs with Queue Places*. Computer Journal, Oxford University Press., Volume 54, Issue 5, May 2010, Pages 653-673.  
ISSN:0010-4620.  
(**Impact Factor:** 1.394 - SJR: Q1 in Computer Science)
- [J1(2009)] S. Baarir, M. Beccuti, D. Cerotti, M. De Pierro, S. Donatelli and G. Franceschinis. *The GreatSPN Tool: Recent Enhancements*. Performance Evaluation Review , 36:(4): 4-9, 2009. Editors G. Casale, R.R. Muntz e G. Serazzi.  
ISSN:0163-5999.  
( SJR: Q1 in Computer Networks and Communications)

#### In Springer Verlag Lecture Notes in Computer Science series

- [L19(2020)] S. Pernice, M. Beccuti, G. Romano, M. Pennisi, A. Maglione, S. Cutrupi, F. Pappalardo, L. Capra, G. Franceschinis, M. De Pierro, G. Balbo, F. Cordero and R. Calogero. *Multiple Sclerosis disease: a computational approach for investigating its drug interactions*. Proceeding of 16<sup>th</sup> Int. Conference Computational Intelligence methods for Bioinformatics and Biostatistics (CIBB2019), volume 12313 LNBI, pp. 299-308, Bergamo, Italy, September 4-6, 2019.
- [L18(2020)] N. Totis, A. Tangherloni, M. Beccuti, P. Cazzaniga, M. Nobile, D. Besozzi, M. Pennisi and F. Pappalardo. *Efficient and Settings-Free Calibration of Detailed Kinetic Metabolic Models with Enzyme Isoforms Characterization*. Proceeding of 15<sup>th</sup> Int. Conference Computational Intelligence methods for Bioinformatics and Biostatistics (CIBB2018), volume 11925 LNBI, pp. 187-202, Caparica, Portugal,

September 6-8, 2018.

- [L17(2018)] 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), volume 11339 of Spring LNCS, pp. 626-637, August 29-31, 2018, Turin, Italy.
- [L16(2018)] F. Kordon, H. Garavel, L.M. Hillah, E. Paviot-Adet, L. Jezequel, F. Hulin-Hubard, E. Amparore, M. Beccuti, B. Berthomieu, H. Evrard, P.G. Jensen, D. Le Botlan, T. Liebke, J. Meijer, J. Srba, Y. Thierry-Mieg, J. van de Pol and K. Wolf. *MCC'2017 - The Seventh Model Checking Contest*. In LNCS Transactions on Petri Nets and Other Models of Concurrency (ToPNoC), vol. 11090, Pages 181-209, 2018. ISBN: 978-3-662-58380-7
- [L15(2018)] M. Beccuti, L. Capra, M. De Pierro, G. Franceschinis and S. Perince. *Deriving Symbolic Ordinary Differential Equations from Stochastic Symmetric Nets without unfolding*. In 15th European Performance Engineering Workshop (EPEW18), volume 11178 of Spring LNCS, pp. 30-45, Octobre 29-30, 2018, Paris, France. ISBN: 978-3-030-02226-6
- [L14(2018)] E. G. Amparore, S. Donatelli, M. Beccuti, G. Garbi 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), vol. 11090, pp. 73-92, 2018. ISBN: 978-3-662-58380-7
- [L13(2017)] 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. ISBN: 978-3-319-68166-5
- [L12(2017)] P. Ballarini, M. Beccuti, E. Bibbona, A. Horváth, R. Sirovich and J. Sproston. *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. ISBN: 978-3-319-66582-5
- [L11(2015)] 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

- [L10(2015)] 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
- [L9(2014)] 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 (ICATPN'14), volume 8489 of Springer LNCS, June 23-27, 2014, pages 273-293, Tunis, Tunisia.  
ISBN: 978-3-642-13674-0
- [L8(2014)] 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 (ICATPN'14), volume 8489 of Springer LNCS, June 23-27, 2014, pages 354-363, Tunis, Tunisia.  
ISBN: 978-3-642-13674-0
- [L7(2013)] E. G. Amparore, P. Ballarini, M. Beccuti, S. Donatelli and G. Franceschinis. *Expressing and computing passage time measures of GSPN models with HASL*. In 34<sup>th</sup> 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
- [L6(2010)] 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
- [L5(2010)] 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
- [L4(2010)] J. Babar, M. Beccuti, S. Donatelli and A. Miner. *GreatSPN Enhanced with Decision Diagram Data Structures*. In 31<sup>st</sup> 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
- [L3(2009)] M. Beccuti, A. Bottrighi, G. Franceschinis, S. Montani and P. Terenziani. *Modeling clinical guidelines through Petri Nets*. In 12<sup>th</sup> 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

[L2(2008)] M. Beccuti, G. Franceschinis, M. Kaaniche and K. Kanoun. *Multi-level dependability modeling of interdependencies between the Electricity and Information Infrastructures*. In 3<sup>rd</sup> 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

[L1(2007)] M. Beccuti, G. Franceschinis and S. Haddad. *Markov Decision Petri Net and Markov Decision Well-Formed Net Formalisms*. In 28<sup>th</sup> 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

#### In Proceeding of Refereed International Conferences/workshops:

[P24(2019)] S. Pernice, G. Romano, G. Russo, M. Beccuti, M. Pennisi, and F. Pappalardo. *Exploiting Stochastic Petri Net formalism to capture the Relapsing Remitting Multiple Sclerosis variability under Daclizumab administration*. Proceeding of 3<sup>rd</sup> Int. Workshop on Computational Methods for the Immune System Function, (CMISF 2019), San Diego, USA, November 2019, Article number 8983368, Pages 2168-2175.

[P23(2019)]L. Capra, M. Beccuti, M. De Pierro, L. Follia, G. Franceschinis and S. Pernice *A Tool for the Automatic Derivation of Symbolic ODE from Symmetric Net Models* Proceeding of 27th IEEE International Symposium on the Modeling, Analysis, and Simulation of Computer and Telecommunication Systems (MASCOTS19), Rennes, France, October 22-25, 2019, Article number 8843193, Pages 36-48.

[P22(2018)] S. Pernice, M. Beccuti, P. Do', M. Pennisi, and F. Pappalardo. *Estimating Daclizumab effects in Multiple Sclerosis using Stochastic Symmetric Nets*. Proceeding of 2<sup>nd</sup> Int. Workshop on Computational Methods for the Immune System Function, (CMISF 2018) Madrid, Spain, December 3-6, 2018, Article number 8621259, Pages 1393-1400.

[P21(2018)] 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 10<sup>th</sup> Int. Workshop on Agents in Traffic and Transportation (ATT 2018), CEUR Workshop Proceedings, Volume 2129, pp. 70-77, Stockholm, Sweden, July 14, 2018.

[P20(2017)] 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(2017)] 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(2016)] N. Totis, M. Beccuti, F. Cordero, L. Follia, C. Riganti, F. Novelli and G. Balbo. ***Dealing with indetermination 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(2014)] 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 11<sup>th</sup> International Conference on Informatics in Control, Automation and Robotics (ICINCO14), pages 817-822, Vienna, Austria, 1-3 September, 2014.
- [P16(2013)] 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(2012)] 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(2012)] 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(2011)] 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(2011)] 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 73<sup>rd</sup> International Conference on IEEE Vehicular Technology Conference (VTC2011-Spring), pages 1-5. Budapest,



Hungary, May 2011  
ISBN:978-1-4244-8331-0

- [P11(2011)] 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(2009)] M. Beccuti, D. Codetta-Raiteri and G. Franceschinis. ***Multiple abstraction levels in performance analysis of WSN monitoring systems***. Proceedings of the 1<sup>st</sup> 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(2009)] 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 4<sup>th</sup> 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(2009)] M. Beccuti, D. Codetta-Raiteri, G. Franceschinis and S. Haddad. ***Parametric NdRFT for the derivation of optimal repair strategies***. Proceeding of the 39<sup>th</sup> 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(2009)] M. Beccuti, G. Franceschinis, S. Donatelli, S. Chiaradonna, F. Di Giandomenico, P. Lollini, G. Dondossola and F. Garrone. ***Quantification of Dependencies in Electrical and Information Infrastructures: the CRUTIAL approach***. Proceedings of the 4<sup>th</sup> 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(2008)] M. Beccuti, D. Codetta-Raiteri, G. Franceschinis and S. Haddad. ***Non deterministic Repairable Fault Trees for computing optimal repair strategy***. Proceedings of the 3<sup>rd</sup> 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(2008)] M. Beccuti, G. Franceschinis, M. Kaaniche and K. Kanoun. ***Multi-level dependability modeling of interdependencies between the***

***Electricity and Information Infrastructures.*** Proceedings of 3<sup>rd</sup> International Conference on Critical Information Infrastructures Security (CRITIS), pages 109-124, Roma, Italy, October 2008. ISBN: 978-3-642-03551-7

[P4(2008)] S. Baarir, M. Beccuti and G. Franceschinis. ***New solvers for asymmetric systems in GreatSPN.*** Proceedings of the 5<sup>th</sup> 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(2007)] M. Beccuti, D. Codetta-Raiter, G. Franceschinis and S. Haddad. ***A framework to design and solve Markov Decision Well-formed Net models.*** Proceedings of the 4<sup>th</sup> 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

[P2(2006)] M. Beccuti, S. Baarir, G. Franceschinis, J-M. Iliè. ***Efficient lumpability check in partially symmetric systems.*** Proceedings of the 3<sup>rd</sup> 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(2004)] J.M. Iliè, S. Baarir, M. Beccuti, C. Delamare, S. Donatelli, C. Duthellet, G. Franceschinis, R. Gaeta and P. Moreaux. ***Extended SWN Solvers in GreatSPN.*** Proceedings of the 1<sup>st</sup> 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

#### **In Refereed Book Chapter:**

[B3(2015)] 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

[B2(2014)] M. Beccuti, S. Chiaradonna, F. Di Giandomenico, S. Donatelli, G. Dondossola, G. Franceschinis. ***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

- [B1(2013)] 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

## 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 2<sup>nd</sup> International Workshop on Sustainable Data Centers and Cloud Computing (SD3C'16), Shanghai, China. December 6-9, 2016.
  
- Program Committee member of the 34<sup>th</sup> International Conference on Application and Theory of Petri Nets and Concurrency, Milano, Italy. June 25-29, 2013.
- Program Committee member of the 35<sup>th</sup> International Conference on Application and Theory of Petri Nets and Concurrency, Tunis, Tunisia, June 23-27, 2014.
- Program Committee member of the 36<sup>th</sup> 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 22<sup>nd</sup> 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 23<sup>rd</sup> 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 25<sup>th</sup> 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 26<sup>th</sup> 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 27<sup>th</sup> International Conference on Parallel Distributed network-based Processing (PDP19), Pavia, Italy, 13-15 February 2019.
- Program Committee member of the Special Session on *High Performance Computing in Modelling and Simulation* in the 28<sup>th</sup> International Conference on Parallel Distributed network-based Processing (PDP20), Vasteras, Sweden, 11-13 March 2020.
- Program Committee member of the Special Session on *High Performance Computing in Modelling and Simulation* in the 29<sup>th</sup> International Conference on Parallel Distributed network-based Processing (PDP21), Valladolid, Spain 10-12 March 2021.
- Publicity chair of 4<sup>th</sup> international workshop on Data Center Performance (DCPerf 2014), Madrid, Spain, June 30 - July 3, 2014.
- Program Committee member of the 4<sup>th</sup> International workshop on Data Center Performance (DCPerf'14), Madrid, Spain, June 30 - July 3, 2014.

- Organizing Committee member of the 32<sup>nd</sup> International Symposium on Computer Performance, Modelling, Measurements and Evaluation (Performance'14), Torino, Italy, 7-9 October, 2014.
  
- Program Committee member of the 6<sup>th</sup> International Workshop on Biological Processes & Petri Nets (BioPPN'15), Brussels, Belgium 21-26 June, 2015.
- Program Committee member of the 7<sup>th</sup> International Workshop on Biological Processes & Petri Nets (BioPPN'16), Torun, Poland, 19-24 June, 2016.
  
- Program Committee member of the 7<sup>th</sup> International Conference on Data Communication Networking (DCNET'16), Lisbon, Portugal, June 26-28, 2016.
- Program Committee member of the 8<sup>th</sup> International Conference on Data Communication Networking (DCNET'17), Madrid, Spain, June 24-26, 2017.
- Program Committee member of the 9<sup>th</sup> International Conference on Data Communication Networking (DCNET'18), Porto, Portugal, June 26-28, 2018.
- Program Committee member of the 11<sup>th</sup> International Conference on Data Communication Networking (DCNET'20), Paris, France, 08-10 Jul 2020.
  
- Program Committee member of 15<sup>th</sup> European Performance Engineering Workshop (EPEW'18), Paris, France , October 29-30 2018.
- Program Committee member of 16<sup>th</sup> European Performance Engineering Workshop (EPEW'19), Milan, Italy, November 28-29, 2019.
  
- Program Committee member of 2<sup>nd</sup> International Workshop on Computational Methods for the Immune System Function (CMISF'18), Madrid, Spain, December 3-6 2018.
  
- Program Committee member of 16<sup>th</sup> International Conference on Computational Intelligence methods for Bioinformatics and Biostatistics (CIBB'19), Bergamo, Italy, September 4-6 2019.

- Program Committee member of 16<sup>th</sup> Annual Meeting of the Bioinformatics Italian Society, June 26-28, 2019, Palermo, Italy
- 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)
- Program Committee member of 12<sup>th</sup> ACM/SPEC International Conference on Performance Engineering (ICPE'20), Rennes, France, April 17-23, 2021.
- Editorial Board of Frontiers in Bioinformatics. E.d.Frontiers (From 2020 to now).

## Organization of Conferences, workshops, special sections:

- Co-chair of the Special Session on *Modeling and Simulation Methods for Computational Biology and System Medicine* in the 16<sup>th</sup> International Computational Intelligence methods for Bioinformatics and Biostatistics (CIBB2019), Bergamo, Italy, 4-6 September 2019.
- Co-chair of workshop *Advances in High-Performance Bioinformatics, Systems Biology* in the 24<sup>th</sup> International European Conference on Parallel and Distributed Computing (Euro-Par2018), 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 22<sup>nd</sup> 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 26<sup>th</sup> 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 27<sup>th</sup> International Conference on Parallel Distributed network-based Processing (PDP19), Pavia, Italy, 13-15 February 2019.
- Co-chair of the Special Session on *Advances in High-Performance Bioinformatics, Systems and Synthetic Biology* in the 28<sup>th</sup> International Conference on Parallel Distributed network-based Processing (PDP20), Vasteras, Sweden, 11-13 March 2020.
- Co-chair of the Special Session on *Advances in High-Performance Bioinformatics and Biomedicine* in the 29<sup>th</sup> International Conference on Parallel Distributed network-based Processing (PDP21), Vallodolid, Spain 10-12 March 2021.
- Co-chair of the Special Session on *Modelling and Simulation of Large Complex Systems* in the 16<sup>th</sup> IEEE International Conference on Scalable Computing and Communications (ScalCom16), Toulouse, France, 18-21 July 2016.

## Instructor in International Tutorials and Workshops

- Instructor at IEEE Winter School on Imaging Genetics, November 26-29, 2019 Verona. (<http://igs.di.univr.it/>)
- 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; (4) 25-29 March 2019.
- 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;
- Organizer and Instructor of the course *Whole Transcriptome Data Analysis* in European Molecular Biology Laboratory (EMBL), Heidelberg, Germany.  
Dates: (1)3-7 June 2019; (2)30 September - 4 October 2019.

- Organizer and instructor of the Elixir course *Docker an reproducibility* in Molecular Biotechnology Center, Turin, Italy, 13-14 June 2019.
- 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.

## Editorial of articles

- LNCS series: *Euro-Par 2018: Parallel Processing Workshops*. Int. Workshops Euro-Par 2018, Turin, Italy, August 27-28, 2018, Revised Selected Papers. Editors: G. Mencagli, D. B. Heras, V. Cardellini, E. Casalicchio, E. Jeannot, F. Wolf, A. Salis, C. Schifanella, R. R. Manumachu, L. Ricci, M. Beccuti, L. Antonelli, J. D. G. Sánchez, S. L. Scott.s

## 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, from 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 *5<sup>th</sup> 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 Universita' 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:* Creation of a computational framework to model and study West Nile Disease (supported by CRT foundation).

*Start date of the project:* 03/02/2020

*Duration:* 24 months

This project aims will be the development of a new computational framework for the study of West Nile Disease which provides new tools for the evaluation, prevention and control of this disease. The novelties and strengths of such framework will be: (1) the use of a graphical formalism based on Petri Nets to simplify the model creation and to provide an intuitive description of the system behaviour; (2) the implementation of an R package to provide a user-friendly interface; (3) the containerization (into Docker images) of all the implemented analysis techniques to improve the framework portability and to ensure the reproducibility of the derived results; (4) The definition of a well-defined schema and related infrastructure to allow users to integrate their own analysis workflows in the framework.

*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-tools hoc 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 solutions 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.