

**FILIPPO MENOLASCINA**

Massachusetts Institute of Technology - Department of Civil and Environmental Engineering  
77 Massachusetts Avenue, Cambridge, Massachusetts 02139  
Tel: +1 (857) 277-8634  
Email: filipm@mit.edu  
Website: <http://menolascina.mit.edu>

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**EDUCATION**

Doctor of Philosophy	University of Naples, Italy	Systems and Synthetic Biology	2008 - 2011
Master of Science	Polytechnic of Bari, Italy	Computer Engineering	2006 - 2008
Bachelor of Science	Polytechnic of Bari, Italy	Computer Engineering	2003 - 2006

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**RESEARCH EXPERIENCE**

❖ **Massachusetts Institute of Technology, Cambridge, MA** (02/12-present)

**Postdoctoral Research Assistant** Mentor: Prof. Roman Stocker

The research project carried out as part of this appointment included:

- carrying out experiments in microfluidic devices specifically designed to generate precisely controlled chemoattractants gradients;
- the mathematical modeling and control of dynamical properties of chemotaxis (Fold Change Detection) in *E. coli* and *S. Typhimurium*;

❖ **University of California at San Diego, San Diego, CA** (08/09-10/09)

**Visiting Research Scholar** Mentor: Prof. Jeff Hasty

As part of this appointment I developed a fully integrated platform for the automation of fluorescence based in-vivo quantitative experiments in microfluidics.

❖ **TeleThon Institute of Genetics and Medicine, Naples, IT** (10/08-01/12)

**Graduate student research assistant** Mentor: Dr. Diego di Bernardo

As part of my PhD program I developed and implemented a control algorithm for synthetic gene networks in *S. Cerevisiae* based on the integration of a real-time microscopy and microfluidics.

❖ **IRCCS (National Cancer Institute), Bari, IT** (06/06-07/09)

**Research Assistant** Mentor: Dr. Stefania Tommasi

In this context my work has been focused on the development of an integrative data analysis system for array Comparative Genomic Hybridization profile mining in the elucidation of molecular differences between sporadic and familial breast cancer from the point of view of gene copy numbers aberrations.

❖ Polytechnic of Bari, Bari, IT

(06/05-09/08)

Research Assistant

Mentor: Prof. Vitoantonio Bevilacqua

The objective pursued as part of this appointment consisted in developing molecular signatures from microarray data for prognostic purposes in oncology. As side projects I worked on:

1. the identification of novel drug targets;
2. the application of first order logic rules inference for the elucidation of tumour evolution patterns;
3. the molecular characterization of relevant pathways altered in most aggressive forms of cancer.

## TEACHING EXPERIENCE

❖ University of Naples, Naples, IT

(02/06-06/06)

Teaching Assistant - Graduate Student Mentor - Control Engineering for Biomedical Engineering

❖ Polytechnic of Bari, Bari, IT

(06/05-09/08)

Teaching Assistant - Graduate Student Mentor - Medical Informatics, Machine Learning

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## PUBLICATIONS (PEER REVIEWED JOURNAL PAPERS)

1. **Filippo Menolascina**, Gianfranco Fiore, Emanuele Orabona, Luca De Stefano, Mike Ferry, Jeff Hasty, Mario di Bernardo, Diego di Bernardo. In vivo real time control of a synthetic gene regulatory network. Submitted.
2. **Filippo Menolascina**, Velia Siciliano, Diego di Bernardo (2012). Engineering and control of biological systems: A new way to tackle complex diseases. *FEBS Lett.* 2012 May 10. PMID: 22580058
3. Velia Siciliano, **Filippo Menolascina**, Lucia Marucci, Chiara Fracassi, Immacolata Garzilli, Nicoletta Moretti and Diego di Bernardo (2011). Construction and modelling of an inducible positive feedback loop stably integrated in a mammalian cell-line. *PLoS Comput. Biol.* 7(6): e1002074. doi:10.1371/journal.pcbi.1002074.
4. **Filippo Menolascina**, Mario di Bernardo, Diego di Bernardo (2011). Analysis, Design and Implementation of a novel scheme for in-vivo control of synthetic gene regulatory networks. *Automatica*. Volume 47, Issue 6, Special Issue on Systems Biology, June 2011, Pages 1265-1270, ISSN 0005-1098, DOI: 10.1016/j.automatica.2011.01.073.
5. **Filippo Menolascina**, Domenico Bellomo, Thomas Maiwald, Vitoantonio Bevilacqua, Caterina Ciminelli, Angelo Paradiso, Stefania Tommasi. Developing optimal input design strategies in cancer systems biology with applications to microfluidic device engineering *BMC Bioinformatics*.(2009). 10 Suppl 12:S4.
6. Alessandro Monaco, **Filippo Menolascina**, Yingdong Zhao, Stefania Tommasi, Marianna Sabatino, Ross Fasano, Angelo Paradiso, Francesco M Marincola and Ena Wang. "Sequencing-grade" screening for BRCA1 variants by oligo-arrays *Journal of Translational Medicine* (2008), 6:64

7. **Filippo Menolascina**, Roberto T Alves, Stefania Tommasi, Patrizia Chiarappa, Myriam Delgado, Vitoantonio Bevilacqua, Giuseppe Mastronardi, Alex Freitasd, Angelo Paradiso. Fuzzy rule induction and artificial immune systems in female breast cancer familiarity profiling *The International Journal of Hybrid Intelligent Systems* (2008)- ISSN 1448-5869
8. Vitoantonio Bevilacqua, Patrizia Chiarappa, Giuseppe Mastronardi, **Filippo Menolascina**, Angelo Paradiso, Stefania Tommasi. Improving Female Breast Cancer Prognosis by Means of Fuzzy Rule Induction with Artificial Immune Systems DCDIS, Series B: *Applications & Algorithms* - (2007) ISSN: 1492-8760 Special Supplement: LSMS 2007. 1-5
9. **Filippo Menolascina**, Stefania Tommasi, Patrizia Chiarappa, Vitoantonio Bevilacqua, Giuseppe Mastronardi, Angelo Paradiso. Data mining techniques in a CGH-based breast cancer subtype profiling: an immune perspective with comparative study. *BMC Systems Biology* 2007, 1(Suppl 1):P70 doi:10.1186/1752-0509-1-S1-P70.
10. Stefania Tommasi, Giuseppina Iannelli, **Filippo Menolascina**, Vitoantonio Bevilacqua and Angelo Paradiso (2011). Determining and interpreting new predictive rules for breast cancer familial inheritance. *OMICS* 15, 125-131.
11. Anita Mangia, Annalisa Chiriatti, Stefania Tommasi, **Filippo Menolascina**, Stella Petroni, Francesco A. Zito, Giovanni Simone, Francesco Schittulli and Angelo Paradiso. BRCA1 expression and molecular alterations in familial breast cancer *Histol Histopathol* (2009) 24: 69-76
12. Vitoantonio Bevilacqua, Giuseppe Mastronardi, **Filippo Menolascina**, Paolo Pannarale, Giuseppe Romanazzi. Bayesian Gene Regulatory Network Inference Optimization by means of Genetic Algorithms *Journal of Universal Computer Science* (2009) 15: 4. 826-839.
13. Vitoantonio Bevilacqua, Patrizia Chiarappa, Giuseppe Mastronardi, **Filippo Menolascina**, Angelo Paradiso, Stefania Tommasi. Identification of Tumour Evolution Patterns by Means of Inductive Logic Programming *Genomics, Proteomics and Bioinformatics* - Elsevier - (2008) ISSN: 1672-0229 6: 2. 91-97
14. Vitoantonio Bevilacqua, Patrizia Chiarappa, Giuseppe Mastronardi, **Filippo Menolascina**, Angelo Paradiso, Stefania Tommasi. Improving Female Breast Cancer Prognosis by Means of Fuzzy Rule Induction with Artificial Immune Systems DCDIS, Series B: *Applications & Algorithms* - (2007) ISSN: 1492-8760 Special Supplement: LSMS 2007. 1-5
15. Vitoantonio Bevilacqua, Giuseppe Mastronardi, **Filippo Menolascina**, Angelo Paradiso, Stefania Tommasi. Genetic Algorithms and Artificial Neural Networks in Microarray Data Analysis: a Distributed Approach. *Engineering Letters* - Special Issue on Bioinformatics - ISSN: 1816-0948 (2006) 13: 3. 335-343

## PUBLICATIONS (CONFERENCE PAPERS)

1. **Filippo Menolascina**, Mario di Bernardo and Diego di Bernardo (2011). Cyber-Yeast: Automatic Control of a Synthetic Network in a Population of Yeast Cells. In proc. Of Synthetic Biology 5.0.
2. Diego di Bernardo, Raffaele La Brocca, **Filippo Menolascina** and Carlo Sansone (2011). Segmentation, tracking and lineage analysis of yeast cells in bright field microscopy images. In Proc. of PRPSBB 2011.
3. **Filippo Menolascina**, Mario di Bernardo, Diego di Bernardo (2010). In-vivo Automatic Control of Synthetic Gene Networks: the IRMA Studycase. In Proc. Of CDC 2010.
4. Vitoantonio Bevilacqua, **Filippo Menolascina**, Domenico Aurora, Sergio Lucivero, Nicola Francesco Quatela (2010). A Novel Tool for Assisted In-silico Cloning and Sequence Editing in Molecular Biology. In: ICIC'10 Proceedings of the Advanced intelligent

- computing theories and applications, and 6th international conference on Intelligent computing Edited by: De Shuang Huang et al.. 239-245
5. Velia Siciliano, Lucia Marucci, **Filippo Menolascina**, Immacolata Garzilli, Diego di Bernardo (2010). Construction and modelling of an inducible positive feedback loop stably integrated in a human cell-line. In Proc. of RECOMB 2010.
  6. **Filippo Menolascina**, Vitoantonio Bevilacqua, Caterina Ciminelli, Stefania Tommasi, Angelo Paradiso (2008) Developing a Theoretical Framework for Optofluidic Device Designing for System Identification in Systems Biology: the EGFR Study Case. In Proc. of BioSysBio 2008 Conference.
  7. **Filippo Menolascina**, Vitoantonio Bevilacqua, Caterina Ciminelli, Mario Nicola Armenise, Giuseppe Mastronardi (2008) A Multi-objective Genetic Algorithm Based Approach to the Optimization of Oligonucleotide Microarray Production Process In: ICIC 2008, LNAI 5227 - ISSN 0302-9743 Edited by: D.-S. Huang et al.. 1039-1046
  8. **Filippo Menolascina**, Stefania Tommasi, Angelo Paradiso, Marco Cortellino, Vitoantonio Bevilacqua, Giuseppe Mastronardi (2007) Novel Data Mining Techniques in aCGH based Breast Cancer Subtypes Profiling: the Biological Perspective In: Proceedings of the 2007 IEEE Symposium on Computational Intelligence in Bioinformatics and Computational Biology (CIBCB 2007)
  9. **Filippo Menolascina**, Roberto T. Alves, Stefania Tommasi, Patrizia Chiarappa, Myriam Delgado, Vitoantonio Bevilacqua, Giuseppe Mastronardi, Alex A Freitas, Angelo Paradiso (2007) Fuzzy Rule Induction and Artificial Immune Systems in Female Breast Cancer Familiarity Profiling In: Knowledge-Based Intelligent Information and Engineering Systems - ISSN 0302-9743 Springer
  10. **Filippo Menolascina**, Patrizia Chiarappa, Stefania Tommasi, Angelo Paradiso, Roberto T Alves, Myriam Delgado, Alex Freitas, Vitoantonio Bevilacqua, Giuseppe Mastronardi (2007) Induction of fuzzy rules with artificial immune systems in acgh based er status breast cancer characterization In: Genetic And Evolutionary Computation Conference - GECCO 2007 - ISBN:978-1-59593-697-4 431 ACM
  11. Giovanni Mummolo, Luigi Ranieri, Vitoantonio Bevilacqua, Pierpaolo Galli, **Filippo Menolascina**, Giovanni Padovano (2007) A Fuzzy Approach for Medical Equipment Replacement Planning In: MM2007 "Maintenance Management"- Third International Conference on Maintenance and Facility Management 229 -235
  12. **Filippo Menolascina**, Stefania Tommasi, Vita Fedele, Angelo Paradiso, Giuseppe Mastronardi, Vitoantonio Bevilacqua (2006) Hybrid Intelligent Data Mining Techniques and Array CGH in Breast Cancer Profiling In: The study of the Intelligent Computing Theory and Methodology in Bioinformatics 93-99
  13. Vitoantonio Bevilacqua, Giuseppe Mastronardi, **Filippo Menolascina**, David Naso (2008) Biochemical Reaction Kinetic Parameters Identification by means of Evolutionary Algorithms: Application to EGFR Pathway. In Proc of NETTAB 2008.
  14. Vitoantonio Bevilacqua, Paolo Pannarale, Giuseppe Mastronardi, Amalia Azzariti, Stefania Tommasi, **Filippo Menolascina**, Francesco Iorio, Diego Di Bernardo, Angelo Paradiso, Nicola A Colabufo, Francesco Berardi, Roberto Perrone, Roberto Tagliaferri (2008) High-Throughput Analysis of the Drug Mode of Action of PB28, MC18 and MC70, Three Cyclohexylpiperazine Derivative New Molecules In: ICIC 2008, LNAI 5227, ISSN 0302-9743 Edited by: D.-S. Huang et al.. 1085-1092
  15. Vitoantonio Bevilacqua, Cosimo G. de Musso, **Filippo Menolascina**, Giuseppe Mastronardi, Antonio Pedone (2007) Hybrid Systems and Artificial Immune Systems: Performances and Applications to Biomedical Research In: Advances in Neural Networks - LNCS 4492 ISSN 2007 - ISSN 0302-9743 1107 -1114

16. Vitoantonio Bevilacqua, Antonella Aulenta, Enza Carioggia, Giuseppe Mastronardi, **Filippo Menolascina**, Giovanni Simeone, Angelo Paradiso, Antonio Scarpa, Diego Taurino (2007) **Metallic Artifacts Removal in Breast CT Images for Treatment Planning in Radiotherapy by Means of Supervised and Unsupervised Neural Network Algorithms** In: **Advanced Intelligent Computing Theories and Applications. With Aspects of Theoretical and Methodological Issues - ICIC 2007**, LNCS 4681- ISSN 0302-9743 Edited by:D.-S. Huang, L. Heutte, and M. Loog. 1355-1363 Springer
17. Vitoantonio Bevilacqua, Giuseppe Mastronardi, **Filippo Menolascina** (2006) **Genetic Algorithm and Neural Network Based Classification in Microarray Data Analysis with Biological Validity Assessment** In: **Computational Intelligence and Bioinformatics - ICIC 2006 - LNBI 4115 - ISSN 0302-9743** Edited by:D.-S. Huang, K. Li, and G.W. Irwin. 475 - 484
18. Vitoantonio Bevilacqua, Giuseppe Mastronardi, **Filippo Menolascina**, P Pannarale, A Pedone (2006) **A Novel Multi-Objective Genetic Algorithm Approach to Artificial Neural Network Topology Optimisation: The Breast Cancer Classification Problem** In: **IJCNN06 - International Joint Conference on Neural Networks** 3916 - 3923 IEEE
19. Vitoantonio Bevilacqua, Giuseppe Mastronardi, **Filippo Menolascina** (2005) **Hybrid Data Analysis Methods and Artificial Neural Network Design in Breast Cancer Diagnosis: IDEST Experience** In: **Proceedings of the 2005 International Conference on Computational Intelligence for Modelling, Control and Automation**
20. Vitoantonio Bevilacqua, Giuseppe Mastronardi, **Filippo Menolascina** (2005) **Intelligent Information Structure Investigation in Biomedical Databases: The Breast Cancer Diagnosis Problem** In: **Proceedings of Eight IASTED International Conference on Intelligent Systems and Control (ISC 2005)**, 309-314 Cambridge, USA
21. Vitoantonio Bevilacqua, Giuseppe Mastronardi, **Filippo Menolascina**, Davide Nitti (2006) **Stereo-Matching Techniques Optimisation Using Evolutionary Algorithms** In: **Intelligent Computing - ICIC 2006**, LNCS 4113 - ISSN 0302-9743 Edited by:D.-S. Huang, K. Li, and G.W. Irwin. 612 - 621 Springer

## BOOK CHAPTERS

1. Diego di Bernardo, Lucia Marucci, **Filippo Menolascina**, Velia Siciliano, **Predicting synthetic gene networks**, (2012) *Methods Mol Biol.* 2012;813:57-81
2. **Filippo Menolascina**, Vitoantonio Bevilacqua, Mariadele Zarrilli, Giuseppe Mastronardi. **Induction of Fuzzy Rules by Means of Artificial Immune Systems in Bioinformatics** In: **Fuzzy Systems in Bioinformatics, Bioengineering and Computational Biology (2009)**. Edited by:Y. Jin and L. Wang. Springer
3. Vitoantonio Bevilacqua, **Filippo Menolascina**, Roberto T. Alves, Stefania Tommasi, Giuseppe Mastronardi, Myriam Delgado, Angelo Paradiso, Giuseppe Nicosia, Alexander A. Freitas. **Artificial Immune Systems in Bioinformatics** In: **Comp. Intel. in Biomed. & Bioinform.**, SCI 151, pp. 271-295, (2008) - ISBN: 978-3-540-70776-9 Edited by:T.G. Smolinski et al.. pp. 271 - 295 Springer

## PROFESSIONAL ASSOCIATIONS AFFILIATIONS

- IEEE
- IAENG

## PATENTS

- (WO2009063270) Method for the design and engineering of oligonucleotides (<http://patentscope.wipo.int/search/en/WO2009063270>)
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## REFERENCES

1. Diego di Bernardo, Dr.  
TeleThon Institute of Genetics and Medicine  
Via Pietro Castellino 111  
80131, Naples - IT  
+39 081 61 32 339  
dibernardo@tigem.it
2. Mario di Bernardo, Prof.  
University of Naples  
Via Claudio 21  
80125, Naples - IT  
+39 0817683909  
mario.dibernardo@unina.it
3. Roman Stocker, Prof.  
Massachusetts Institute of Technology  
15 Vassar Street,  
Cambridge, MA (USA)  
+1 617 253 3726  
romans@mit.edu