Curriculum Vitae

Personal information

First name(s) / Surname(s)	**Elisa Ficarra**
Address(es)	Via Mezzofanti 2/2, 40137 Bologna, Italy
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Nationality	Italian

Occupational field

Full Professor on Bioinformatics and AI for Health

Work experience

Dates	2021- current (June 2024)
Occupation or position held	Full Professor
Main activities and responsibilities	

- PI of Bioinformatics and AI for Health research group
- Responsible for funded projects:
    - H2020 DECIDER on deep learning technologies for overcoming chemotherapy resistance in ovarian cancer, 1M€ unit funding, WP leadership;
    - Welcome Trust funded project ShiMabs on Human monoclonal antibodies for therapy and vaccine acceleration, 110k€ unit funding, leadership of Bioinformatics tasks;
    - PRIN AIDA: "explAinable multImodal Deep learning for personAlized oncology", applied on NSCLC, 42k€ unit funding, three WPs leadership.
- Responsible for an industrial contract on deep learning models for fluorescence image analysis and deep learning for drug screening, with TLS foundation.
- Responsible for a research contract on deep learning models for WSI image analysis and for multimodal learning in cancer, with HUMANITAS foundation.
- Member of the European Healthcare Data Innovation Council for the definition of standardised data and infrastructure systems and legal frameworks for data-sharing and tools in healthcare.
- Member of the Working group of the Emilia-Romagna Italian Region "Evaluation of artificial intelligence technologies deployment in the health and social-health sector" for enabling effective implementation of AI technology in the healthcare system overcoming system's limitations.
- Keynote speaker in
    - National and International Conferences (IEEE CBMS 2021)
    - International Scientific Panels (Helsinki in April 2022, on challenges and advances in oncology and clinics through AI; Brussels June 2022, on data-sharing technical and legal constraints and good practices; Rome June 2023, Healthcare Summit on digitalization and AI in Healthcare, Electronic Medical Record (EMR), Electronic Health Record (EHR))
- Professor of Computer Programming, Bioinformatics, AI for Bioinformatics, Programming and technologies for Bioengineering, AI in Medicine courses
- Member of Committee of the PhD programs in the International Doctorate in ICT, and in Artificial Intelligence (National Doctorate) Health & Life Science Area

Name and address of employer	Dept of Engineering "Enzo Ferrari", University of Modena and Reggio Emilia, Via Vivarelli 10, Modena, Italy
Type of business or sector	Computer Engineering – Bioinformatics, Machine Learning for Health and medical data processing systems
Dates	2015-2021
Occupation or position held	Associate Professor

Main activities and responsibilities	- Leader of a Bioinformatics and Medical Image processing group - Associate partner and responsible for a research unit in the IMI2 European funded project HARMONY, 2017-2021 - Technical coordinator of a research unit for the Politecnico di Torino in the Horizon 2020 European funded project MANUELA, 2018-2022 - Responsible for a research unit for the Politecnico di Torino in the Italian funded project DISLOMAN, 2016-2019. - Responsible for industrial research contract in Machine learning for Industry 4.0: 2A S.p.A 2018, 2019; TIM-Telecom Italia S.p.A 2019, 2020 - Member of Committee of the PhD programs in "Complex systems for life sciences" at the University of Turin 2017-2020 - Professor of Computer Programming and Bioinformatics courses
Name and address of employer	Politecnico di Torino, C.so Duca degli Abruzzi 24, 10129 Torino, Italy, Dept of Computer Engineering (DAUIN)
Type of business or sector	Computer Engineering – Bioinformatics, Machine Learning for Health and medical data processing systems
Dates	2008-2015
Occupation or position held	Assistant Professor
Main activities and responsibilities	- Coordinator of Bioinformatics and Medical Image processing activities - Professor of Computer Programming and Bioinformatics courses (undergraduate and PhD students) - Consultant for the FP7 European funded project "NGS-PTL - Next Generation Sequencing platform for targeted Personalised Therapy of Leukemia", 2013-2015 - Responsible for a research unit in the Italian funded project IZS PLV 04/12 RC, 2013-2016 - Technical coordinator for the Politecnico di Torino in the ENIAC European funded project "DeNeCor: Devices for NeuroControl and NeuroRehabilitation", 2013-2016 - Technical coordinator for the Politecnico di Torino of ENIAC European funded project "CSI - Central Nervous System Imaging", 2010-2013 - Associate Editor for IEEE Transactions on Information Technology in Biomedicine (Q1 Computer Science, actual IEEE Journal of Biomedical and Health Informatics), 2011-2013
Name and address of employer	Politecnico di Torino, C.so Duca degli Abruzzi 24, 10129 Torino, Italy, Dept of Computer Engineering (DAUIN)
Type of business or sector	Computer Engineering – Bioinformatics, Machine Learning for Health and medical data processing systems
Dates	2006-2008
Occupation or position held	Post-doc fellowship
Main activities and responsibilities	- Coordinator of Bioinformatics activities - Responsible for a research unit in the Italian funded CIPE project "Clinical-molecular correlation in the lung cancer with alteration of the epidermal growth factor", 2006-2009 - Collaboration with the Dep. of Computer Science at Stanford University, CA USA, and the Integrated Systems Centre at the EPFL of Lausanne, Switzerland for a project on bioimaging and bioinformatics, Oct 2005 – Sept. 2006. - Professor of Computer Programming courses at the Politecnico di Torino, and of Clinical Image Processing and Multimedia Systems courses at the University of Urbino, Italy - Assistant in Algorithms and Advanced Programming courses at the Politecnico di Torino Tutor of PhD students in Bioinformatics and Medical Image processing
Name and address of employer	Politecnico di Torino, C.so Duca degli Abruzzi 24, 10129 Torino, Italy, Dept of Computer Engineering (DAUIN)
Type of business or sector	Computer Engineering – Bioinformatics, Machine Learning for Health and medical data processing systems
Education and training	

Dates	2001
Title of qualification awarded	Master's degree in Electrical Engineering, specialisation in Biomedical Engineering at the University of Bologna, Italy, March 2001. Master Thesis title: Mathematical model of Cerebellum control of fast movements (Neural Networks).
Principal subjects/occupational skills covered	Electronic Engineer, Biomedical specialization
Name and type of organisation providing education and training	University of Bologna, Bologna, Italy
Level in national or international classification	Bachelor and MS degree programs, International title
Dates	2003-2006
Title of qualification awarded	Ph.D. of excellence (Alta Scuola Interpolitecnica di Dottorato) in Systems and Computer Science at Dep. of Control and Computer Engineering (DAUIN) – Politecnico di Torino, Italy. Jan. 2003 – Dec. 2005. PhD Thesis title: Bioimaging and Data mining techniques for Genetic information discovery.
Principal subjects/occupational skills covered	Computer Science and Computer Engineering, Specialization in Bioinformatics and Machine Learning
Name and type of organisation providing education and training	Politecnico di Torino, Torino, Italy
Level in national or international classification	International PhD title

Personal skills and competences

Mother tongue(s)   **Italian**

Other language(s)   **English, French**

Self-assessment

European level (*)

Understanding				Speaking				Writing	
Listening		Reading		Spoken interaction		Spoken production			
English C2	Very Good	C1	Excellent	C2	Very Good	C2	Very Good	C2	Very Good
French C2	Excellent	C2	Excellent	C2	Very Good	C2	Very Good	B2	Good

(*) [Common European Framework of Reference for Languages](#)

Social skills and competences

- Strong collaborations with multidisciplinary teams in Hospitals, Research Centres and Universities, such as: Columbia University (Prof. Raul Rabadan), NY-USA; Cornell University (Prof. Giorgio Inghirami), NY-USA; Helsinki University (Prof. Sampsa Hautaniemi), FI; Helsinki University Hospital (Dr. Anni Virtanen), FI; Institut Curie (Dr Olivier Ayrault), FR; Institut Pasteur (Dr Benno Schwikowski), FR; University of Berlin (Prof. Knut Reinert), D; University of Granada (Prof. Natalia Diaz Rodriguez), ES; Institute for Research Barcelona (Prof. Fran Supek), ES; University Bio-campus of Rome (Prof. Paolo Soda), IT; IRCCS (Institute for Cancer Research and Treatment), IT; HUMANITAS foundation (Dr. Marta Ranzini, Prof. Victor Savevsky), IT; Toscana Life Sciences foundation TLS (Dr Rino Rappuoli, Dr Duccio Medini), IT; AIforia, FI; Philips Healthcare, NL

Organisational skills and competences	- PI and responsible of several European and Italian projects (10), and Industrial Contracts (5) - Scientific supervisor of 15 Research fellows, 16 PhD students, and 9 Post-doc Fellows at the Politecnico di Torino, the University of Torino, and the University of Modena and Reggio Emilia, concerning Bioinformatics, Machine Learning and Deep Learning for Molecular Biology, oncology, personalized medicine, and drug screening, and Bio-medical image processing projects (2007 – 2024) - PI of Bioinformatics research activities since the PhD studies - Coordinator of research groups at the Politecnico di Torino and the University of Modena and Reggio Emilia, including research fellows, PhD students, post-doc fellows, Assistant and Associate Professors.
Technical skills and competences	- Deep knowledge in machine learning methods applied to bioinformatics and medical-clinical image processing and analysis - Strong experience in image processing, pattern recognition, segmentation and classification for biomedical applications and molecular analyses - Deep knowledge in algorithmic optimization techniques for biomedical applications and molecular analyses - Deep knowledge and strong experience on deep sequencing (NGS) techniques applied to specific topics related to the analysis of RNA and DNA-Seq data for several applications, such as alignment, alternative splicing, transplicing and chimeric transcripts analysis, deletions and insertions, introns retention, gene expression - Deep knowledge and strong experience on software programming in C, C++, Python languages
Other skills and competences	- Experience on data protection policy-related issues and technical solutions for privacy preserving and data-sharing - Experience on Eye-Tracking Assistive technology and software design for ALS patients
Additional information	• Invited Associate Editor for BMC Genomics in 2018 (Q1 in Molecular Biology, also covering bioinformatics contents) • Member of the TPC of BIOINFORMATICS conferences, and of IEEE/ACM conferences (e.g., ICPR, BIBE, CBMS, Track chair in VLSI-SOC 2010 "Bio-systems"), since 2008 • Start Cup Torino-Piemonte 2010 "Donna Innovazione Piemonte" prize for spin-off project "Biossol" • Visiting scientist at the Integrated System Laboratory – EPFL, Lausanne, Switzerland, for a research project on bioimaging and functional genomics, Jan. – Dec. 2005 (visiting paid contract by ISL, EPFL) • Invited scientist at the Computer Science Dept. of Stanford University (California, USA) for a project on DNA-protein docking, June - Sept. 2002. • Publication summary: 148 publications; 61 journal papers (95,1% Q1&Q2, 75,5% Q1), 74 peer-reviewed conference papers, 6 short papers, 7 Chapters. H-index: 27 (Scholar), Citations: 2711 (Scholar), i10-index: 50 (Scholar), FWCI: 1.44 (Scopus), Percent of publication in the top 25% most cited documents worldwide: 34% (Scopus), Percent of publication in the top 25% journals by CiteScore: 60%