Francesco Bardozzo

Ph.D.

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Profile

Francesco Bardozzo is a Researcher and Assistant Professor at the University of Salerno, specializing in deep learning, explainable AI, and neuromorphic modeling. He holds B.Sc. and an M.Sc. cum laude in Computer Scince with a master specialization in Artificial and Computational Intelligence. He earned his Ph.D. (summa cum laude, 2018–2021) focusing on AI applied to micro-robotic surgery and soft-tissue 3D reconstruction. His research spans in cutting-edge AI development in several application domain such as computational finance, medical imaging, generative composition, and computational biology. He collaborates with top institutions (e.g. University of Cambridge (UK), IRCAD (FR), University of Navarra (ES)) and is a Research Fellow at the NAIR Research Center(ES).

Academic Positions

Occupations

- Assistant Professor, University of Salerno (Dept. of Business Sciences – Management & Innovation Systems/DISA-MIS), Fisciano, Italy, from April 2022 to Present.
- Postdoctoral Fellow, University of Salerno, Fisciano, Italy, from 2021-09-01 to 2022-08-31.
- Ph.D. Student, University of Salerno, Fisciano, Italy, from 2018-02-01 to 2021-03-31.

Teaching

- Advanced Deep Learning module (Ph.D. program in Big Data & Artificial Intelligence, University of Salerno, from May 2023);
- Data management and visualization and Advanced Algorithms for Bioinformatics (Laboratory) (University of Salerno, from Sept 2024);

International courses at the Public University of Navarra (ES) (Data Sciences and Deep Learning in Biomedicine, Oct 2024-Nov 2024).

Editorial Activities

Member of the Editorial Board of International Journal of Computational Intelligence Systems - from September 2024 to Present. https://link.springer.com/journal/44196 - **Q2 journal**

Peer Review Activities

Artificial Intelligence in Medicine (2), BMC Bioinformatics (3), Computer Methods and Programs in Biomedicine (4), Computers & Structures (2), Computers in Biology and Medicine (13), Engineering Applications of Artificial Intelligence (11), Evolutionary Intelligence (1), IEEE Transactions on Cybernetics (1), Journal of Ambient Intelligence & Humanized Computing (1), Knowledge-Based Systems (2), Neural Networks (11), Neurocomputing (9).

Scientific Responsibilities in International Research Projects

Scientific Coordinator of "Enhancing learnable models extraction, abstraction and explainable feature relations" within the research project entitled "Resilient AI Framework for Secure and Ethical Machine Learning Systems" (RAISE), funded under the public call "Bando a cascata" issued by the University of Naples "Federico II" – SPOKE 3, RESILIENT AI, CUP E63C22002150007. This project aligns with the objectives of the Future Artificial Intelligence Program and is funded by the Italian National Recovery and Resilience Plan (PNRR), Mission 4 "Education and Research" – Component 2 "From Research to Business" – Investment Line 1.3, Project ID Code PE00000013.

Journal Publications

From 2018 to 2025 I have published 14 peer-reviewed scientific articles indexed in Scopus, covering the domains of Computer Science, Computer Science Applications, Computational Biology, Bioengineering, and Biomedical Engineering. Among these, 13 articles are published in Q1 journals, and 1 article in a Q2 journal, according to the Scopus-SJR classification within the relevant subject categories.

1. **Enhanced tissue slide imaging in the complex domain via cross-explainable GAN for Fourier ptychographic microscopy**
   Bardozzo F., Fiore P., Valentino M., Bianco V., Memmolo P., Miccio L., Brancato V., Smaldone G., Gambacorta M., Salvatore M., Ferraro P., Tagliaferri R.
   Computers in Biology and Medicine, 2024. DOI: 10.1016/j.compbiomed.2024.108861 - **Q1 journal**
2. **Elegans-AI: How the connectome of a living organism could model artificial neural networks**
   Bardozzo F., Terlizzi A., Simoncini C., Lió P., Tagliaferri R.
   Neurocomputing , 2024. DOI: 10.1038/s41598-024-72649-9 - **Q1 journal**
3. **Consensus of algorithms for lesion segmentation in brain MRI studies of multiple sclerosis**
   De Rosa, A. Benedetto, M., Tagliaferri, S., Bardozzo, F., D'Ambrosio, A., Bisecco, A., Gallo, A. and Cirillo, M., Tagliaferri, R., Esposito, F, *Nature Scientific Reports* , 2024. DOI: 10.1016/j.neucom.2024.127598 - **Q1 journal**
4. **Label-free cell classification in holographic flow cytometry through an unbiased learning strategy**
   Ciaparrone G., Pirone D., Fiore P., Xin L., Xiao W., Li X., Bardozzo F., Bianco V., Miccio L., Pan F., Memmolo P., Tagliaferri R., Ferraro P.
   Lab on a Chip , 2024. DOI: 10.1039/d3lc00385j - **Q1 journal**
5. **An automated pipeline integrating AlphaFold 2 and MODELLER for protein structure prediction**
   Gil Zuluaga, F. H., D'Arminio, N., Bardozzo, F., Tagliaferri, R., Marabotti, A.
   Computational and Structural Biotechnology Journal , 2023. DOI: 10.1016/j.csbj.2023.10.056 - **Q1 journal**
6. **Neural networks for fatigue crack propagation predictions in real-time under uncertainty**
   Giannella V., Bardozzo F., Postiglione A., Tagliaferri R., Sepe R., Armentani E.
   Computers and Structures , 2023. DOI: 10.1016/j.compstruc.2023.107157 - **Q1 journal**
7. **Machine Learning as a Support for the Diagnosis of Type 2 Diabetes**
   Agliata, A., Giordano, D., Bardozzo, F., Bottiglieri, S., Facchiano, A., Tagliaferri, R.
   International Journal of Molecular Sciences , 2023. DOI: 10.3390/ijms24076775 - **Q1 journal**
8. **Deep Learning-Based, Misalignment Resilient, Real-Time Fourier Ptychographic Microscopy Reconstruction of Biological Tissue Slides**
   Bianco V., Priscoli M.D., Pirone D., Zanfardino G., Memmolo P., Bardozzo F., Miccio L., Ciaparrone G., Ferraro P., Tagliaferri R.

IEEE Journal of Selected Topics in Quantum Electronics , 2022. DOI: 10.1109/JSTQE.2022.3154236 - **Q1 journal**

9. **StaSiS-Net: A stacked and siamese disparity estimation network for depth reconstruction in modern 3D laparoscopy**
   Bardozzo F., Collins T., Forgione A., Hostettler A., Tagliaferri R.
   Medical Image Analysis , 2022. DOI: 10.1016/j.media.2022.102380 - **Q1 journal**
10. **Soft Brain Ageing Indicators Based on Light-Weight LeNet-Like Neural Networks and Localized 2D Brain Age Biomarkers**
    Bardozzo F., Delli Priscoli M., Russo A.G., Crescenzi D., Di Benedetto U., Esposito F., Tagliaferri R.
    Lecture Notes in Computer Science (including subseries Lecture Notes in Artificial Intelligence and Lecture Notes in Bioinformatics), 2022. DOI: 10.1007/978-3-031-20837-9_19 - **Q2 journal**
11. **Signal metrics analysis of oscillatory patterns in bacterial multi-omic networks**
    Bardozzo F., Lió P., Tagliaferri R.
    Bioinformatics, 2021. DOI: 10.1093/bioinformatics/btaa966 - **Q1 journal**
12. **Sugeno integral generalization applied to improve adaptive image binarization**
    Bardozzo F., De La Osa B., Horanská Ľ., Fumanal-Idocin J., Priscoli M.D., Troiano L., Tagliaferri R., Fernandez J., Bustince H.
    Information Fusion , 2021. DOI: 10.1016/j.inffus.2020.10.020 - **Q1 journal**
13. **Neuroblastoma Cells Classification through Learning Approaches by Direct Analysis of Digital Holograms**
    Delli Priscoli M., Memmolo P., Ciaparrone G., Bianco V., Merola F., Miccio L., Bardozzo F., Pirone D., Mugnano M., Cimmino F., Capasso M., Iolascon A., Ferraro P., Tagliaferri R.
    IEEE Journal of Selected Topics in Quantum Electronics , 2021. DOI: 10.1109/JSTQE.2021.3059532 - **Q1 journal**
14. **A study on multi-omic oscillations in Escherichia coli metabolic networks**
    Bardozzo F., Lió P., Tagliaferri R.
    BMC Bioinformatics , 2018. DOI: 10.1186/s12859-018-2175-5 - **Q1 journal**

Conference Publications

1. **Label-Free Nervous System Single Cell Classification Using Pretrained VGG and ResNet Networks**
   Fiore P., Bardozzo F., Tagliaferri R.
   8th IEEE International Forum on Research and Technologies for Society and Industry Innovation, 2024. DOI: 10.1109/RTSI61910.2024.10761642
2. **Artificial Intelligence for Label-free cells classification in holographic microscopy**
   Fiore P., Pirone D., Bardozzo F., Xin L., Xiao W., Li X., Ciaparrone G., Bianco V., Miccio L., Pan F., Memmolo P., Ferraro P., Tagliaferri R.
   Digital Holography and Three-Dimensional Imaging , 2024. DOI: 10.1364/dh.2024.w4a.29
3. **Deep learning assisted Fourier Ptychography for cells and tissue analysis**
   Bianco V., Valentino M., Behal J., Pirone D., Bardozzo F., Memmolo P., Miccio L., Tagliaferri R., Ferraro P.
   Proceedings of SPIE - The International Society for Optical Engineering, 2023. DOI: 10.1117/12.2674881
4. **Cross X-AI: Explainable Semantic Segmentation of Laparoscopic Images in Relation to Depth Estimation**
   Bardozzo F., Priscoli M.D., Collins T., Forgione A., Hostettler A., Tagliaferri R.
   Proceedings of the International Joint Conference on Neural Networks, 2022. DOI: 10.1109/IJCNN55064.2022.9892345
5. **Real-time FPM reconstruction and misalignment correction by numerical Multi-Look and GAN**
   Bianco V., Delli Priscoli M., Valentino M., Pirone D., Behal J., Zanfardino G., Memmolo P., Bardozzo F., Miccio L., Ciaparrone G., Tagliaferri R., Ferraro P.
   Optics InfoBase Conference Papers, 2022. DOI: 10.1038/s41598-024-72649-9
6. **Gated Local Adaptive Binarization using Supervised Learning**
   Fumanal-Idocin J., Uriarte J., de la Osa B., Bardozzo F., Fernández J., Bustince H.
   CEUR Workshop Proceedings, 2021. DOI: 10.3390/ijms24076775
7. **Raw holograms based machine learning for cancer cells classification in microfluidics**

Delli Priscoli M., Memmolo P., Ciaparrone G., Bianco V., Merola F., Miccio L., Bardozzo F., Pirone D., Mugnano M., Cimmino F., Capasso M., Iolascon A., Ferraro P., Tagliaferri R.
Optics InfoBase Conference Papers, 2021. DOI: 10.1016/j.csbj.2023.10.056

8. **Gated Local Adaptive Binarization using Supervised Learning**
Fumanal-Idocin J., Uriarte J., de la Osa B., Bardozzo F., Fernández J., Bustince H.
CEUR Workshop Proceedings, 2021. DOI: 10.3390/ijms24076775
9. **Blind microscopy image denoising with a deep residual and multiscale encoder/decoder network**
Gil Zuluaga F.H., Bardozzo F., Rios Patino J.I., Tagliaferri R.
Proceedings of the Annual International Conference of the IEEE Engineering in Medicine and Biology Society, 2021. DOI: 10.1109/EMBC46164.2021.9630502
10. **Motor strength classification with machine learning approaches applied to anatomical neuroimages**
Bardozzo F., Uribe S.C., Russo A.G., Castaño M.J., Delli Priscolli M., Esposito F., Tagliaferri R.
Proceedings of the International Joint Conference on Neural Networks, 2020. DOI: 10.1109/IJCNN48605.2020.9207471
11. **Detecting the neural processes of lie generation with low-cost EEG: a preliminary study**
Garofalo D., Nota F.D., Zoleo F., Bardozzo F., Priscoli M.D., Tagliaferri R., Esposito F.
Convegno Nazionale di Bioingegneria, 2020. DOI: 10.1016/j.compstruc.2023.107157
12. **A comparative analysis of multi-backbone Mask R-CNN for surgical tools detection**
Ciaparrone G., Bardozzo F., Priscoli M.D., Londono Kallewaard J., Zuluaga M.R., Tagliaferri R.
Proceedings of the International Joint Conference on Neural Networks, 2020. DOI: 10.1109/IJCNN48605.2020.9206854
13. **Multi omic oscillations in bacterial pathways**
Bardozzo F., Lió P., Tagliaferri R.
Proceedings of the International Joint Conference on Neural Networks, 2015. DOI: 10.1109/IJCNN.2015.7280853

Academic Conferences

- **Local Committee Organizer, BITS 2016** – Annual Meeting of the Bioinformatics Italian Society. Responsible for logistics, website management, and digital proceedings. Held at the University of Salerno, Italy.
01/01/2015 – 01/04/2016.
Conference Committee Website
- **Speaker, CIBB 2021** – 17th International Conference on Computational Intelligence Methods for Bioinformatics and Biostatistics (CIBB 2021, online edition). Presented the work: *Soft Brain Ageing Indicators Based on Light-Weight LeNet-Like Neural Networks and Localized 2D Brain Age Biomarkers*, in the session *Machine learning in healthcare informatics and medical biology*.
15/11/2021 – 17/11/2021
- **Scientific Committee Member and Organizer, BBCC 2022** – Bioinformatics and Computational Biology Conference (online edition).
13/12/2022 – 15/12/2022.
Scientific Committee Link
- **Invited Speaker, Music and Artificial Intelligence 2023** – Politecnico delle Arti di Firenze, AFAM – Alta Formazione Artistica e Musicale (Ministry of University and Research, MUR). Invited talk in the session: *Muses and Music for Artificial Intelligence: challenges and myths of generative music, human and artificial entities in dialogue*.
23/03/2023
- **Speaker, CIBB 2024** – 19th International Conference on Computational Intelligence Methods for Bioinformatics and Biostatistics, held in Benevento, Italy. Presented the project: *FP-Elegans M1: feature pyramid reservoir connectome transformers and multi-backbone feature extractors for MEDMNIST2D-V2*, in the *Medical Informatics* main track.
04/09/2024 – 06/09/2024
- **Chair, Medical Informatics Main Track, CIBB 2024** – 19th International Conference on Computational Intelligence Methods for Bioinformatics and Biostatistics, University of Sannio, Benevento, Italy. Topics included: AI in biomedicine, health informatics, biomedical imaging, multi-source data integration, NLP, explainable AI, decision support systems, personalized medicine, and computational drug discovery.
04/09/2024 – 06/09/2024

- **Plenary Lecture, Public University of Navarra (Spain)** – NAIR National Research Center, Pamplona. Title: *Connectomic Deep Learning: rethinking a novel form of bioplausibility*. Topics addressed bioplausible neural networks and their relevance in computational neuroscience.
  09/10/2024
- **Co-Chair and Organizer, BITS 2025** – Annual Meeting of the Bioinformatics Italian Society, hosted at the University of Naples Federico II. Organizer of conference activities and co-chair of the special session on Artificial Intelligence and Structural Proteomics.
  11/06/2025 – 13/06/2025