






Lucia Migliorelli


Work Experience

- March 2022 – present  **Postdoctoral Researcher**
Department of Information Engineering (Università Politecnica delle Marche)
- May 2021 – present  **Co-Founder of AIDAPT S.r.l**
Ancona (Italy)


Education

- November 2018 – October 2021  **European Ph.D. in Information Engineering cum Laude**
Curriculum: Computer, Management and Automation Engineering
Department of Information Engineering (Università Politecnica delle Marche)
Thesis title: *Towards digital patient monitoring: deep learning methods for the analysis of multimedia data from the actual clinical practice.*
Supervisors: *Prof. Emanuele Frontoni, Sara Moccia, Ph.D*
- September 2016 – October 2018  **M.Sc. Biomedical Engineering cum Laude**
Università Politecnica delle Marche
Thesis title: *A learning-based model for patient-specific monitoring of glucose levels: advanced methods for the analysis of heterogeneous data to control biomedical parameters.*
- September 2012 – July 2016  **B.Sc. Biomedical Engineering**
Università Politecnica delle Marche
Thesis title: *Sviluppo di una Interfaccia Grafica Utente per l'applicazione CaRiSMA (Cardiac Risk Self Monitoring Assessment).*


Abroad Research

- February 2020 – May 2020  **Visiting Ph.D. Student**
Department of Electrónica Industrial (Universidade do Minho, Braga, Portugal)
Supervisor: *Prof. Cristina Peixoto Santos.*




Research Assignments

- May 2022  **Co-organizer**
AI-Care: Artificial Intelligence for preterm infants' healthCare workshop.
In conjunction with the 21st International Conference on Image Analysis and Processing.
<https://sites.google.com/view/ai-care/home?authuser=o>.

Research Assignments (continued)

- April 2022  **Technical Program Committee**
ICTS4eHealth: 2nd Edition of the IEEE Conference on ICT Solutions for eHealth.
In conjunction with the 27th IEEE Symposium on Computers and Communications.
<https://icts4ehealth.icar.cnr.it/>.

Experience as reviewer for journal articles

- 2021-present  **Reviewer for Multimedia Tools and Applications (Springer Nature)**
20 completed assignments
-  **Reviewer for Expert Systems with Applications (Elsevier)**
15 completed assignments
-  **Reviewer for Medical & Biological Engineering & Computing (Springer)**
7 completed assignments

Research Publications

Journal Articles

- 1 **Migliorelli, L.**, Tiribelli, S., Cacciatore, A., Frontoni, E., Giovanola, B., & Moccia, S. (accepted). Accountable deep learning-based vision systems for preterm infants' monitoring. *Computer*.
- 2 **Migliorelli, L.**, Cacciatore, A., Ottaviani, V., Berardini, D., Dellaca, R. L., Frontoni, E., & Moccia, S. (Accepted). Twineda: A sustainable deep-learning approach for limb-position estimation in preterm infants' depth images. *Medical & Biological Engineering Computing*.
- 3 **Migliorelli, L.**, Scoppolini Massini, L., Coccia, M., Villani, L., Frontoni, E., & Squartini, S. (Under review). A deep learning-based telemonitoring application to automatically assess oral diadochokinesis in patients with bulbar amyotrophic lateral sclerosis. *Computer Methods and Programs in Biomedicine*.
- 4 Cannata, G. P., **Migliorelli, L.**, Mancini, A., Frontoni, E., Pietrini, R., & Moccia, S. (2022). Generating depth images of preterm infants in given poses using gans. *Computer Methods and Programs in Biomedicine*, 225, 107057.
- 5 **Migliorelli, L.**, Frontoni, E., & Moccia, S. (2022). An accurate estimation of preterm infants' limb pose from depth images using deep neural networks with densely connected atrous spatial convolutions. *Expert Systems with Applications*, 117458.
- 6 Casaccia, S., Naccarelli, R., Moccia, S., **Migliorelli, L.**, Frontoni, E., & Revel, G. M. (2021). Development of a measurement setup to detect the level of physical activity and social distancing of ageing people in a social garden during covid-19 pandemic. *Measurement*, 184, 109946.
- 7 Montomoli, J., Romeo, L., Moccia, S., Bernardini, M., **Migliorelli, L.**, Berardini, D., ... Garcia, P. D. W. et al. (2021). Machine learning using the extreme gradient boosting (xgboost) algorithm predicts 5-day delta of sofa score at icu admission in covid-19 patients. *Journal of Intensive Medicine*, 1(02), 110–116.
- 8 Palermo, M., Moccia, S., **Migliorelli, L.**, Frontoni, E., & Santos, C. P. (2021). Real-time human pose estimation on a smart walker using convolutional neural networks. *Expert Systems with Applications*, 184, 115498.
- 9 Salati, M., **Migliorelli, L.**, Moccia, S., Andolfi, M., Roncon, A., Guiducci, G. M., ... Refai, M. (2021). A machine learning approach for postoperative outcome prediction: Surgical data science application in a thoracic surgery setting. *World Journal of Surgery*, 45(5), 1585–1594.

- 10 Antognoli, L., Moccia, S., **Migliorelli**, L., Casaccia, S., Scalise, L., & Frontoni, E. (2020). Heartbeat detection by laser doppler vibrometry and machine learning. *Sensors*, 20(18), 5362.
- 11 Berardini, D., Moccia, S., **Migliorelli**, L., Pacifici, I., di Massimo, P., Paolanti, M., & Frontoni, E. (2020). Fall detection for elderly-people monitoring using learned features and recurrent neural networks. *Experimental Results*, 1.
- 12 Frontoni, E., Romeo, L., Bernardini, M., Moccia, S., **Migliorelli**, L., Paolanti, M., ... Zingaretti, P. (2020). A decision support system for diabetes chronic care models based on general practitioner engagement and ehr data sharing. *IEEE Journal of Translational Engineering in Health and Medicine*, 8, 1–12.
- 13 **Migliorelli**, L., Moccia, S., Pietrini, R., Carnielli, V. P., & Frontoni, E. (2020). The babypose dataset. *Data in brief*, 33, 106329.
- 14 Calamanti, C., Moccia, S., **Migliorelli**, L., Paolanti, M., & Frontoni, E. (2019). Learning-based screening of endothelial dysfunction from photoplethysmographic signals. *Electronics*, 8(3), 271.
- 15 Agostinelli, A., Morettini, M., Sbrollini, A., Maranesi, E., **Migliorelli**, L., Di Nardo, F., ... Burattini, L. (2017). Carisma 1.0: Cardiac risk self-monitoring assessment. *The Open Sports Sciences Journal*, 10(1).

Conference Proceedings

- 1 **Migliorelli**, L., Alborino, F., Coccia, M., Villani, L., Frontoni, E., & Moccia, S. (accepted). End-to-end facial landmark detection to characterise oro-facial impairments in neurological patients: Towards innovative techniques for the assessment of dysarthria. In *17th international conference on computational intelligence methods for bioinformatics and biostatistics*.
- 2 Cacciatore, A., **Migliorelli**, L., Berardini, D., Tiribelli, S., Pigliapoco, S., & Moccia, S. (2022). Some ethical remarks on deep learning-based movements monitoring for preterm infants: Green ai or red ai? In *International conference on image analysis and processing* (pp. 165–175). Springer.
- 3 Carbonari, M., Vallasciani, G., **Migliorelli**, L., Frontoni, E., & Moccia, S. (2021). End-to-end semantic joint detection and limb-pose estimation from depth images of preterm infants in nicus. In *2021 IEEE Symposium on Computers and Communications (ISCC)* (pp. 1–6). IEEE.
- 4 **Migliorelli**, L., Berardini, D., Rossini, F., Frontoni, E., Carnielli, V., & Moccia, S. (2021). Asymmetric three-dimensional convolutions for preterm infants' pose estimation. In *2021 43rd Annual International Conference of the IEEE Engineering in Medicine & Biology Society (EMBC)* (pp. 3021–3024). IEEE.
- 5 **Migliorelli**, L., Frontoni, E., Appugliese, S., Cannata, G. P., Carnielli, V., & Moccia, S. (2021). Improving preterm infants' joint detection in depth images via dense convolutional neural networks. In *2021 43rd Annual International Conference of the IEEE Engineering in Medicine & Biology Society (EMBC)* (pp. 3013–3016). IEEE.
- 6 Berardini, D., **Migliorelli**, L., Moccia, S., Naldini, M., De Angelis, G., & Frontoni, E. (2020). Evaluating the autonomy of children with autism spectrum disorder in washing hands: A deep-learning approach. In *2020 IEEE Symposium on Computers and Communications (ISCC)* (pp. 1–7). IEEE.
- 7 Bernardini, M., Ferri, A., **Migliorelli**, L., Moccia, S., Romeo, L., Silvestri, S., ... Mancini, A. (2019). Augmented microscopy for dna damage quantification: A machine learning tool for environmental, medical and health sciences. In *International design engineering technical conferences and computers and information in engineering conference* (Vol. 59292, V009T12A003). American Society of Mechanical Engineers.
- 8 **Migliorelli**, L., Cenci, A., Bernardini, M., Romeo, L., Moccia, S., & Zingaretti, P. (2019). A cloud-based healthcare infrastructure for neonatal intensive-care units. In *International design engineering technical conferences and computers and information in engineering conference* (Vol. 59292, V009T12A009). American Society of Mechanical Engineers.

- 9 **Migliorelli**, L., Moccia, S., Avellino, I., Fiorentino, M. C., & Frontoni, E. (2019). Mydi application: Towards automatic activity annotation of young patients with type 1 diabetes. In *2019 IEEE 23rd International Symposium on Consumer Technologies (ISCT)* (pp. 220–224). IEEE.
- 10 Moccia, S., **Migliorelli**, L., Pietrini, R., & Frontoni, E. (2019). Preterm infants' limb-pose estimation from depth images using convolutional neural networks. In *2019 IEEE Conference on Computational Intelligence in Bioinformatics and Computational Biology (CIBCB)* (pp. 1–7). IEEE.

Books and Chapters

- 1 Moccia, S., Romeo, L., **Migliorelli**, L., Frontoni, E., & Zingaretti, P. (2020). Supervised CNN strategies for optical image segmentation and classification in interventional medicine. In *Deep learners and deep learner descriptors for medical applications* (pp. 213–236). Springer, Cham.

Skills

Languages	<ul style="list-style-type: none"> Native language Italian. Reading, writing and speaking competencies for English.
Coding	<ul style="list-style-type: none"> Python, MatLab, C, \LaTeX.
Miscellaneous	<ul style="list-style-type: none"> Academic research, teaching, training, consultation, \LaTeX typesetting and publishing.

Miscellaneous Experience

Team awards

December 2020	<ul style="list-style-type: none"> Ecapital Business Plan Competition. 20.000 euro.
November 2020	<ul style="list-style-type: none"> Italian Society of Neurology, Call topic: <i>How the model of access to care for the neurological patient is evolving in the post Covid-19 era</i>. 20.000 euro.
October 2020	<ul style="list-style-type: none"> The Microsoft Grant Award: AI for Health COVID-19.
February 2020	<ul style="list-style-type: none"> Milan Critical Care Datathon.
November 2019	<ul style="list-style-type: none"> B-Pioneers: Biogen SMA Hackathon. 20.000 euro.
May 2019	<ul style="list-style-type: none"> Mastertech: Var Group Hackathon. 20.000 euro.

Supervised Students

Luigi Smargiassi, *B.Sc. in Computer, Management and Automation Engineering (Università Politecnica delle Marche)*.

Chiara Baldini, *M.Sc. in Biomedical Engineering cum Laude (Università di Pisa)*.

Francesco Alborino, *M.Sc. in Computer, Management and Automation Engineering cum Laude (Università Politecnica delle Marche)*.

Kevin Cela, *M.Sc. in Computer, Management and Automation Engineering cum Laude (Università Politecnica delle Marche)*.

Lorenzo Scoppolini Massini, *M.Sc. in Computer, Management and Automation Engineering cum Laude (Università Politecnica delle Marche)*.

Greta Vallasciani, *M.Sc. in Biomedical Engineering cum Laude (Università Politecnica delle Marche)*.

Alessandro Cacciatore, *M.Sc. in Biomedical Engineering (Politecnico di Milano)*.

Outreach activities and STEM paths

January 2021 – May 2021

Trainer and role model

Coding Girls

Fondazione Mondo Digitale

Ancona, February 10, 2023

I hereby authorize the use of my personal data in accordance to the GDPR 679/16 - "European regulation on the protection of personal data".