Niccolò Biondi

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Google Scholar page

PRINCIPAL INTERESTS

Machine Learning, Deep Learning, Computer Vision, Representation Learning, Continual/Lifelong Learning, Compatible Learning, Multimodal Learning, Metric Learning, Self-Supervised Learning, Neural Collapse, Contrastive Learning, Long-tail distribution datasets, Imbalanced dataset, Retrieval Systems, Face Recognition Systems, Biomedical Segmentation.

ACADEMIC BACKGROUND

Post Doc 2024-2025
MICC Lab, University of Florence, Florence, IT

Ph.D. Information Engineering (cum laude) 2021-2024
University of Florence, Florence, IT
- Ph.D. research in information engineering under direction of Prof. Alberto Del Bimbo and Federico Pernici. Learning Backward-Compatible Representations via Stationarity.

M.Sc. Information Engineering (cum laude) 2021
University of Florence, Florence, IT
- Focus areas: machine learning and computer vision (thesis: Incremental Learning of Compatible Representations) and statistics and optimization theory.

B.Sc. Information Engineering 2018
University of Florence, Florence, IT
- Focus areas: computer science and machine learning (thesis: Financial Document Recognition with Neural Network) and basis of physics and mathematics.

EMPLOYMENT HISTORY

Project Transfer 2022
Leonardo SPA
- Face Recognition on Masked Face with the use of advanced deep learning methods and transfer learning techniques

Research Fellow 2021
European Commission under European Horizon 2020 Programme, grant number 951911 - AI4Media at MICC, University of Florence.

SPECIAL ACHIEVEMENTS

Awards
- *Best Student Paper Award* for "Contrastive Supervised Distillation for Continual Representation Learning." 21st International Conference on Image Analysis and Processing, May 2022.
- *Petrosino Price* for "CoReS: Compatible Representation via Stationary." October 2022, Best M.Sc. Thesis of the CVPL Association.

RESEARCH FUNDING

(2022-2023), CINECA award under the ISCRA initiative (ISCRA-C - "CoReS", ID: HP10C4TIIM) to pursue further research on Compatible Representations with the role of External Supervisor, PI.

- Availability of high performance computing resources.

(2021-2022), CINECA award under the ISCRA initiative (ISCRA-C - "ILCoRe", ID: HP10CRMI87) to pursue further research on Compatible Representations

- Availability of high performance computing resources.

TEACHING (at UniFi)

- *COMPUTER VISION AND INTELLIGENT MEDIA RECOGNITION B031289 (B241)* *2024/25*
  Together with Prof. Pietro Pala, advanced MSc class on the fundamentals of deep learning, computer vision.
- *COMPUTER VISION AND INTELLIGENT MEDIA RECOGNITION B031289 (B241)* *2023/24*
  Together with Prof. Alberto Del Bimbo, advanced MSc class on the fundamentals of deep learning and computer vision.

3. Moretti Gianni, Research Grant in the "DHEAL – COM-Digital Health Solutions in Community Medicine" EU Project under the co-supervision of Lenge Matteo (Research and Innovation Engineer, Scientific Direction of Meyer Children's Hospital IRCCS) and Prof. Pietro Pala.
   - Designing and implementing advanced ML/DL-based platforms for the integrated analysis of clinical and research multimodal data, aimed at automatic risk stratification or decision support for critically ill patients.
2. Chisci Marco, *Continual Representation Learning for Visual Search*, M.Sc. thesis, 11/2024 under the supervision of Prof. Ferderico Pernici
1. Barletti Tommaso, *Continual Representation Learning for Visual Search*, M.Sc. thesis, 12/2021 under the supervision of Prof. Alberto Del Bimbo and Ferderico Pernici

JOURNAL ARTICLES

See also my Google Scholar page and my GitHub profile.

3. Biondi, N., Pernici, F., Ricci, S. and Del Bimbo, A. "A Stationary (and Therefore Compatible) Representation is All You Need.". (Submitted to IEEE TPAMI, under review)
2. Biondi, N., Mugnai D., Pernici, F., Bruni, M., and Del Bimbo, A. (2021). *CL^2R: Compatible Lifelong Learning Representations.* ACM Transactions on Multimedia Computing, Communications, and Applications, https://dl.acm.org/doi/full/10.1145/3564786.
1. Biondi, N., Pernici, F., Bruni, M., and Del Bimbo, A. (2021). *CoReS: Compatible Representations via Stationarity.* IEEE Transactions on Pattern Analysis and Machine Intelligence (*TPAMI*), https://doi.org/10.1109/TPAMI.2023.3259542.

CONFERENCE CONTRIBUTIONS

7. Ricci, S., Biondi, N., Pernici, F., Patras, I., Del Bimbo, A. (2025). "λ-Orthogonality Regularization for Compatible Representation Learning." In *The Thirty-Ninth Annual Conference on Neural Information Processing Systems (NeurIPS2025).*
6. Magrini, G., Marini, N., Becattini, F., Berlincioni, L., Biondi, N., Pala, P., Del Bimbo, A. "FRED: The Florence RGB-Event Drone Dataset.". In *The 33rd ACM International Conference on Multimedia (ACMMM2025).*

5. Vivoli, E., Biondi, N., Bertini, M. and Karatzas, D., 2024. "ComiCap: A VLMs pipeline for dense captioning of Comic Panels." In *Proc. of the IEEE/CVF Conference on European Conference on Computer Vision (ECCV2024)*, Milan, IT. (Published in AI4WA workshop).
4. Vivoli, E., Campaioli, I., Nardoni, M., Biondi, N., Bertini, M. and Karatzas, D. "Comics Datasets Framework: Mix of Comics datasets for detection benchmarking." In *International Conference on Document Analysis and Recognition (ICDAR2024)*, 2024, August, (pp. 154-167). Cham: Springer Nature Switzerland.
3. Ricci, S., Biondi, N., Pernici, F. and Del Bimbo, A. "Backward-Compatible Aligned Representations via an Orthogonal Transformation Layer.", in *Proc. of the IEEE/CVF Conference on European Conference on Computer Vision (ECCV2024)*, (pp. 28793-28804), Milan, IT, 2024. (Published in the Beyond Euclidean: Hyperbolic and Hyperspherical Learning for Computer Vision workshop).
2. Biondi, N., Pernici, F., Ricci, S., and Del Bimbo, A. *Stationary Representations: Optimally Approximating Compatibility and Implications for Improved Model Replacements.* In 2024 IEEE/CVF Conference on Computer Vision and Pattern Recognition (CVPR 2024) (Highlight paper, notable top 2.8%). https://dx.doi.org/10.48550/arXiv.2405.02581
1. Barletti T., Biondi, N., Pernici, F., Bruni, M., and Del Bimbo, A. (2022). *Contrastive Supervised Distillation for Continual Representation Learning.* 21st International Conference on Image Analysis and Processing *(Oral - Awarded as Best Paper)*, https://dl.acm.org/doi/10.1007/978-3-031-06427-2_50.

CONFERENCE TUTORIALS

2. Biondi, N., Ricci, S., Pernici, F., Del Bimbo, A. "Model Updates without Reindexing: A Tutorial on Backward-Compatible Representations". In *23rd International Conference on Image Analysis and Processing (ICIAP2025).* Rome, IT.
1. Biondi, N., Ricci, S., Pernici, F., Del Bimbo, A. "Learning Backward Compatible Representations". In *ACM Multimedia 2024 (ACMMM2024)*, Melbourne, AU.

ATTENDED SCHOOLS

6th Advanced Course on Data Science & Machine Learning (ACDL 2023)	2023-Jun
International Computer Vision Summer School (ICVSS 2022)	2022-Jul
Machine Learning Summer School (MLNN$^{\mathrm{N}}$ 2022)	2022-Jun
High Performance Deep Learning with GPU (NVIDIA)	2022-Jun
Advanced School on Parallel Computing (CINECA)	2021-Mar

REVIEWING ACTIVITY

Review of the following journals/conferences:

- The Thirty-Ninth Annual Conference on Neural Information Processing Systems (NeurIPS25)
- ACM International Conference on Multimedia (ACMMM25)
- International Conference on Computer Vision (ICCV25)
- IEEE/CVF Conference on Computer Vision and Pattern Recognition 2025 (CVPR25)

- European Conference on Computer Vision 2024 (ECCV24)
- IEEE International Conference on Multimedia and Expo 2024 (ICME24)
- IEEE/CVF Conference on Computer Vision and Pattern Recognition 2024 (CVPR24)
- IEEE Transactions on Neural Networks and Learning Systems (IEEE TNNLS)
- ACM International Conference on Multimedia Retrieval 2023 (ICMR23)
- IEEE Transactions on Multimedia (IEEE TMM)
- 26TH International Conference on Pattern Recognition Workshop (ICPRW22)
- 26TH International Conference on Pattern Recognition (ICPR22)
- 21st International Conference on Image Analysis and Processing (ICIAP21)
- 3rd International Conference on Pattern Recognition and Artificial Intelligence (ICPRAI22)

Help to review some articles from:

- IEEE Transactions on Pattern Analysis and Machine Intelligence (TPAMI)
- Conference on Neural Information Processing Systems 2022 (NeurIPS22)
- European Conference on Computer Vision 2022 (ECCV22)
- Computer Vision and Pattern Recognition 2022 (CVPR22)
- MDPI Sensors Journal

HACKATON *AIRtificial Intelligence* 2019-Dec

Aurenautica Militare ISMA and Leonardo SPA

- Focusing on investigate machine learning solution to improve standard procedures in aeronautics

I hereby declare that the information provided is true and correct to the best of my knowledge and belief. I give my consent for the processing of my personal data included in my application for the needs of the recruitment process.

Place, Date **Signature**

10 October 2025