






<b>PERSONAL INFORMATION</b>	Davide Bacciu	
		
		
		
		

<b>ACADEMIC POSITIONS</b>	
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Nov 2023 - ...	<b>Full Professor of Computer Science</b> Dipartimento di Informatica – Università di Pisa
2020 – Oct 2023	<b>Associate Professor of Computer Science</b> Dipartimento di Informatica – Università di Pisa Research development and coordination on Artificial Intelligence (AI) and Machine Learning (ML); coordinator of national, European, industrial research projects on AI/ML topics; coordination of research personnel (RTD, postdocs, phd, RA); teaching AI and ML courses at B.Sc, M.Sc. and Ph.D. level; technology transfer on AI/ML.
2017 - 2020	<b>Senior Assistant Professor of Computer Science</b> Dipartimento di Informatica – Università di Pisa Research development and coordination on AI/ML; coordinator of national, European, industrial research projects on AI/ML; coordination of research personnel (RTD, postdocs, phd, RA); teaching AI and ML courses at B.Sc. and M.Sc. level; technology transfer on AI/ML.
2014 - 2017	<b>Junior Assistant Professor of Computer Science</b> Dipartimento di Informatica – Università di Pisa Research development and coordination on AI/ML; coordinator of a national research project on ML for structure data; participation to European and industrial research projects on AI/ML topics; teaching AI and ML courses at B.Sc. and M.Sc. level.
2009 - 2014	<b>Research Associate</b> Dipartimento di Informatica – Università di Pisa Research development and coordination on AI/ML; participation to European research projects on AI/ML topics; teaching assistant in AI and ML courses at B.Sc. and M.Sc. level.

<b>EDUCATION AND TRAINING</b>	
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2008	<b>Ph.D. in Computer Science and Engineering</b> IMT Lucca Institute for Advanced Studies
2003	<b>M.Sc. in Computer Science</b> University of Pisa, Italy

<b>PROJECTS (last five years)</b>	
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<b>With leadership roles</b>
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Oct 2022 - Sept 2026	EIC-PATHFINDER-CHALLENGE-01-2021 EMERGE “Emergent awareness from minimal collectives” (n. 101070918) (Project Coordinator, UNIFI)
Jan 2020 - Jun 2023	H2020-ICT-01-2019-RIA TEACHING “A computing Toolkit for building Efficient Autonomous applications leveraging Humanistic Intelligence” (n. 871385) (Project Coordinator, UNIFI)
Dec 2018 - Dec 2021	Industrial research project by Biobeats Ltd, Deep and Bayesian learning for perceived stress prediction (PI, UNIFI)
Nov 2015 - Nov 2019	MIUR-SIR 2014 LISTIT “Learning non-Isomorph Structured Transductions for Image and Text fragments” (n. RBSI14STDE) (Project Coordinator, UNIFI)
Sep 2020 – Aug 2023	H2020-ICT-48-RIA TAILOR “Foundations of Trustworthy AI – Integrating Reasoning, Learning and Optimization” (PI for the UNIFI research unit)
May 2022 - Apr 2024	MIT-UNIFI-2021 project “Learning-Symbolic Programming” (co-PI, UNIFI unit)
	<b>Project reviewer</b>
	EU project reviewer: H2020-ICT-48-RIA ELISE, H2020-ICT-48-CSA VISION, HE ICT-RIA ELSA Reviewer for funding programs: EU EIC Accelerator, EU EIC Pathfinder, EU MSCA, ERC Starting Grant, Cyprus research council, Estonian Research Council, Romanian National Research Council, MIUR EUROSTARS, POR FESR Lazio 2014-2020, American University Beirut “Internal research projects”, Università di Padova “Joint University-Industry projects”, Università di Firenze “Competitive projects for fixed-term contract researchers”, Università di Verona “Fundamental Research” and “Joint Projects” programme

**COMMUNITY SERVICE (last 5y)**

Chair	IEEE Technical Committee on Neural Networks (2023-present)
Vice-Chair	IEEE Technical Committee on Neural Networks (2022-2023)
Board Member	IEEE Technical Committee on Neural Networks (2019-present)
Vice President and Board Member	Italian Association for AI (AIxIA) (2021-present)
Secretary and Board Member	Italian Association for AI (AIxIA) (2017-2021)
Chair and founder	IEEE-CIS Task Force on Learning for Structured Data (2020-2023)
Coordinator	Bioinformatics workgroup of the COVID-19 initiative of CLAIRE-AI (2020-2021)
Workshops co-chair	1 <sup>st</sup> Pervasive Artificial Intelligence Workshop at IEEE WCCI 2022
Publicity/Public Relations Chair	IEEE World Congress on Computational Intelligence (WCCI 2022)
Ph.D. School Organization	“Advanced Course on Data Science & Machine Learning” (editions: ACDL 2018, ACDL 2019, ACDL 2020, ACDL 2021)
TPC member	NeurIPS (outstanding/top PC 2019, 2022,2023), ICLR (outstanding/top PC 2021, 2023), ICML (outstanding/top PC 2020), IJCAI (outstanding PC 2023), AAAI, ECAI, ECML/PKDD, AISTATS, AAMS, IJCNN, ESANN

**EDITORIAL ACTIVITY**

2022-present	Senior Editor of the IEEE Transactions on Neural Networks and Learning Systems
2017 - 2021	Associate Editor of the IEEE Transactions on Neural Networks and Learning Systems
2018-2021	Collection Editor and Academic Editor of Plos ONE
2021-present	Guest editor for the IEEE TNNLS special issue “Causal Discovery and Causality-Inspired Machine Learning”

**PHD SUPERVISION**

2022 - Present	Alessandro Carta, National Ph.D. in AI, Università di Pisa
2023 - Present	Niko Dalla Noce, Ph.D. in Computer Science, Università di Pisa

2022 - Present	Eric Nuerthey Coleman, Ph.D. in Computer Science, Università di Pisa
2020 - Present	Valerio De Caro, Ph.D. in Computer Science, Università di Pisa
2020 - Present	Alessio Gravina, Ph.D. in Computer Science, Università di Pisa
2021 - Present	Riccardo Massidda, Ph.D. in Computer Science, Università di Pisa
2020 - Present	Michele Resta, Ph.D. in Computer Science, Università di Pisa
2019 - Present	Dario Balboni, Data Science PhD, Scuola Normale Superiore
2022 - Present	Elia Piccoli, Ph.D. in Computer Science, Università di Pisa
2021 - Present	Reshawan Ramjattan, Ph.D. in Computer Science, Università di Pisa
2021 - Present	Rudy Semola, Ph.D. in Computer Science, Università di Pisa
2022 - Present	Lorenzo Simone, Ph.D. in Computer Science, Università di Pisa
2023- Present	Alessandro Trenta, National Ph.D. in AI, Università di Pisa
2021 - Present	Edoardo Urettini, National Ph.D. in AI, Università di Pisa
2020 - 2024	Daniilo Numeroso, Ph.D. in Computer Science, Università di Pisa
2019 - 2023	Asma Sattar, Ph.D. in Computer Science, Università di Pisa
2019 - 2023	Francesco Landolfi, Ph.D. in Computer Science, Università di Pisa
2019 - 2023	Andrea Cossu, Data Science PhD, Scuola Normale Superiore
2019 - 2023	Giacomo Lanciano, Data Science PhD, Scuola Normale Superiore
2019 - 2022	Andrea Valenti, Ph.D. in Computer Science, Università di Pisa
2018 - 2022	Francesca Lizzi, Data Science PhD, Scuola Normale Superiore
2018 - 2021	Elisa Ferrari, Data Science PhD, Scuola Normale Superiore
2017 - 2021	Federico Errica, Ph.D. in Computer Science, Università di Pisa
2017 - 2020	Antonio Carta, Ph.D. in Computer Science, Università di Pisa
2017 - 2020	Daniele Castellana, Ph.D. in Computer Science, Università di Pisa
2017 - 2020	Francesco Crecchi, Ph.D. in Computer Science, Università di Pisa
2017 - 2020	Marco Podda, Ph.D. in Computer Science, Università di Pisa

#### TEACHING

2021 - 2023	"Deep Learning" course, Master on Big Data
2021	PhD course on "Deep Learning for signal processing, vision and control"
2019 - 2021	PhD course on "Reinforcement Learning"
2018 - Present	MSc course on "Intelligent Systems for Pattern Recognition"
2016 - Present	Programming Lab 1
2015-2017	MSc course on "Computational Neuroscience"
2014	MSc course on "Advanced Machine Learning"

#### INSTITUTIONAL RESPONSIBILITIES

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2023 - Present	Board member of the National Ph.D. Program in Artificial Intelligence, University of Pisa, Italy
2020 - Present	Board member of the Ph.D. Program in Computer Science, University of Pisa, Italy
2020 - Present	Founder and co-director of the UNIPI-CNR joint laboratory on Pervasive Artificial Intelligence (pai.di.unipi.it)

**(Selected) INVITED TALKS**

2024	Deep learning for graphs, invited lecture, Cambridge University
2023	Pervasive AI: (deep) learning into the wild, keynote speech, keynote speech, 4th International Conference on Deep Learning Theory and Applications (DeLTA 2023)
2023	Shaping Neural Networks with Dynamical Systems, invited talk, 2023 International Workshop "Deep Learning: Theory, Algorithms, and Applications"
2022	Continual learning: a sustainable and scalable way to deep learning, keynote speech. ICDM IncrLearn Workshop
2022	Generative models for structured data, invited lecture, IDSIA Lugano
2021	Deep Graph Networks, invited lecture, ACDL 2021
2021	A Gentle Introduction to Deep Learning for Graphs, invited lecture, PUC Minas University
2020	Learning with structured data, invited tutorial, ACDL 2020
2019	Deep learning for graphs, invited lecture, CALDAM pre-conference Ph.D. school, IIT Kharagpur
2018	Learning Generative Models for Structured Data, research colloquium, CITEC, Bielefeld University
2017	Deep Learning: Research Directions and Upcoming Challenges, Keynote Speech at CHPC 2017, Pretoria
2017	Combining IoT and Intelligent Robotics: Challenges and Opportunities, Invited Panel at IoT Forum, Geneva
2012	Learning Bayesian Network skeletons with high-dimensional and large-sample size data, Invited Lecture, Kings College, London
2011	Bayesian network structure learning for high-dimensions and large samples, Invited Lecture, Computing for Graphical models, Royal Statistical Society, London
2009	A Perceptual Learning Model to Discover the Hierarchical Latent Structure of Image Collections, E. R. Caianiello Invited Lecture at WIRN'09
2009	A Multilayered Latent Aspect Model for Multimodal Image Collections, Invited Seminar, HCI Colloquium, University of Heidelberg

**FELLOWSHIPS AND AWARDS**

2020	Outstanding Associate Editor 2019 of the IEEE Transactions on Neural Networks and Learning Systems.
2018	IEEE Senior Member
2009	Caianiello award for the best Italian Ph.D. thesis on neural networks

**ADDITIONAL INFORMATION**

2020	Abilitazione nazionale as Full Professor in Computer Science (01/B1)
2020	Abilitazione nazionale as Full Professor in Computer Engineering (09/H1)
2011 - Present	Supervision of 7 postdocs, 27 Ph.D. students, 20 Research Assistants, >120 M.Sc. and Sc. theses
2023-Present	Director of AI Research – Aptus.AI enterprise
2023 – Present	Founder and scientific advisor of QuantaBrain startup

2023 - Present	Founder and scientific advisor of ContinualST startup (University of Pisa spinoff)
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PUBLICATIONS	
<p>Publications best and most relevant in the last 10 years</p> <p>For a full list of publications please check <a href="https://scholar.google.it/citations?user=1d5n2WkAAAAJ&amp;hl">https://scholar.google.it/citations?user=1d5n2WkAAAAJ&amp;hl</a></p> <p>Publication statistics:</p> <ul style="list-style-type: none"> <li>• 1 book</li> <li>• 54 journal articles</li> <li>• 139 conference &amp; workshop articles</li> </ul>	<ol style="list-style-type: none"> <li>1. Riccardo Massidda, Sara Magliacane, Davide Bacciu, Learning Causal Abstractions of Linear Structural Causal Models, Proceedings of UAI 2024</li> <li>2. Alessio Gravina, Daniele Zambon, Davide Bacciu, Cesare Alippi, Temporal Graph ODEs for Irregularly-Sampled Time Series, Proceedings of IJCAI 2024</li> <li>3. Alessio Gravina, Giulio Lovisotto, Claudio Gallicchio, Davide Bacciu, Claas Grohnfeldt, Long Range Propagation on Continuous-Time Dynamic Graphs, Proceedings of ICML 2024</li> <li>4. Michele Resta, Davide Bacciu, Self-generated Replay Memories for Continual Neural Machine Translation, Proceedings of NAACL 2024</li> <li>5. Riccardo Massidda, Martina Cinquini Francesco Landolfi, Davide Bacciu, Constraint-Free Structure Learning with Smooth Acyclic Orientations Conference, The Twelfth International Conference on Learning Representations, ICLR 2024</li> <li>6. Marco Lepri, Davide Bacciu, Cosimo Della Santina, Neural Autoencoder-Based Structure-Preserving Model Order Reduction and Control Design for High-Dimensional Physical Systems, IEEE Control Systems Letters, 2023</li> <li>7. Dobrik Georgiev, Danilo Numeroso, Davide Bacciu, Pietro Liò, Neural Algorithmic Reasoning for Combinatorial Optimisation, Proceedings of LoG 2023, PMRL.</li> <li>8. Emanuele Cosenza, Andrea Valenti, Davide Bacciu (2023) Graph-based Polyphonic Multitrack Music Generation, Proceedings of the 32nd INTERNATIONAL JOINT CONFERENCE ON ARTIFICIAL INTELLIGENCE (IJCAI 2023)</li> <li>9. Danilo Numeroso, Davide Bacciu, Petar Veličković, Dual Algorithmic Reasoning, Proceedings of the Eleventh International Conference on Learning Representations (ICLR 2023)</li> <li>10. Alessio Gravina, Davide Bacciu, Claudio Gallicchio, Anti-Symmetric DGN: a stable architecture for Deep Graph Networks, Proceedings of the Eleventh International Conference on Learning Representations (ICLR 2023)</li> <li>11. D. Bacciu, A. Conte, F. Landolfi, Generalizing Downsampling from Regular Data to Graphs, Proceedings of the 37th AAAI Conference on Artificial Intelligence (AAAI 2023)</li> <li>12. R. Massidda, D. Bacciu (2022), Knowledge-Driven Interpretation of Convolutional Neural Networks, Proceedings of the 2022 European Conference on Machine Learning and Principles and Practice of Knowledge Discovery in Databases (ECML-PKDD 2022)</li> <li>13. D. Castellana, F. Errica, D. Bacciu, A. Micheli (2022) The Infinite Contextual Graph Markov Model, Proceedings of the 39th International Conference on Machine Learning (ICML 2022), 162: 2721-2737</li> <li>14. D Bacciu, D Morelli, V Pandelea, Modeling (2022) Mood Polarity and Declaration Occurrence by Neural Temporal Point Processes, IEEE Transactions on Neural Networks and Learning Systems</li> <li>15. Bacciu, Davide; Numeroso, Danilo, Explaining Deep Graph Networks via Input Perturbation, IEEE Transactions on Neural Networks and Learning Systems, 2022</li> <li>16. Gravina, Alessio; Wilson, Jennifer L.; Bacciu, Davide; Grimes, Kevin J.; Priami, Corrado, Controlling astrocyte-mediated synaptic pruning signals for schizophrenia drug repurposing with Deep Graph Networks, Plos Computational Biology, 2022</li> <li>17. Collodi, Lorenzo; Bacciu, Davide; Bianchi, Matteo; Averta, Giuseppe, Learning with few examples the semantic description of novel human-inspired grasp strategies from RGB data, IEEE Robotics and Automation Letters, 2022</li> <li>18. Federico Errica, Davide Bacciu, Alessio Micheli (2021), Graph Mixture Density Networks, Proceedings of the 38th International Conference on Machine Learning (ICML 2021) 139:3025-303</li> <li>19. Davide Bacciu, Alessio Conte, Roberto Grossi, Francesco Landolfi, Andrea Marino, K-plex cover pooling for graph neural networks. Data Mining and Knowledge Discovery, Vol. 35, pages 2200–2220 (journal track of the Proceedings of ECML/PKDD 2021), 2021</li> <li>20. Andrea Cossu, Antonio Carta, Vincenzo Lomonaco, Davide Bacciu (2021) Continual learning for recurrent neural networks: An empirical evaluation, Neural Networks, Volume 143, pp 607-627</li> <li>21. Daniele Castellana, Davide Bacciu A tensor framework for learning in structured domains, Neurocomputing, 2021</li> <li>22. Antonio Carta, Alessandro Sperduti, Davide Bacciu, Encoding-based memory for recurrent neural networks, Neurocomputing, Volume 456, 2021, Pages 407-420, 2021</li> <li>23. D. Bacciu et al (2021), "TEACHING - Trustworthy autonomous cyber-physical applications through human-centred intelligence," 2021 IEEE International Conference on Omni-Layer Intelligent Systems (COINS)</li> <li>24. Bacciu, D., Bertocini, G. &amp; Morelli, D. (2021) Topographic mapping for quality inspection and intelligent filtering of smart-bracelet data. Neural Computing &amp; Applications, 1433-3058</li> <li>25. Resta, Michele, Anna Monreale, and Davide Bacciu (2021) Occlusion-Based Explanations in Deep Recurrent Models for Biomedical Signals, Entropy 23, no. 8: 1064. DOI: 10.3390/e23081064</li> <li>26. Vincenzo Lomonaco, Lorenzo Pellegrini, Andrea Cossu, Antonio Carta, Gabriele Graffieti, Tyler L. Hayes, Matthias De Lange, Marc Masana, Jary Pomponi, Guido van de Ven, Martin Mundt, Qi She, Keiland Cooper, Jeremy Forest, Eden Belouadah, Simone Calderara, German I. Parisi, Fabio Cuzzolin, Andreas Tolias, Simone Scardapane, Luca Antiga, Subutai Amhad, Adrian Popescu, Christopher Kanan, Joost van de Weijer, Tinne Tuytelaars, Davide Bacciu, Davide Maltoni (2021), "Avalanche: an End-to-End Library for Continual Learning," 2021 IEEE/CVF Conference on Computer Vision and Pattern Recognition Workshops (CVPRW), pp. 3595-3605</li> </ol>

	<p>27. Davide Bacciu, Federico Errica, Alessio Micheli, Marco Podda (2020), A Gentle Introduction to Deep Learning for Graphs, <i>Neural Networks</i>, NEURAL NETWORKS, vol. 129, p. 203-221</p> <p>28. Errica, Federico; Podda, Marco; Bacciu, Davide; Micheli, Alessio (2020) A Fair Comparison of Graph Neural Networks for Graph Classification, <i>Proceedings of the Eighth International Conference on Learning Representations (ICLR 2020)</i></p> <p>29. Podda, Marco; Bacciu, Davide; Micheli, Alessio (2020) A Deep Generative Model for Fragment-Based Molecule Generation, <i>Proceedings of the 23rd International Conference on Artificial Intelligence and Statistics (AISTATS) 2020</i>, PMLR: 2240-2250, Volume 108.</p> <p>30. Castellana, Daniele; Bacciu, Davide (2020) Learning from Non-Binary Constituency Trees via Tensor Decomposition. <i>Proceedings of the 28th International Conference on Computational Linguistics (COLING 2020)</i>, Barcelona, Spain (Online), pp.3899-3910</p> <p>31. Ferrari, Elisa, Retico, Alessandra, Bacciu, Davide (2020). Measuring the effects of confounders in medical supervised classification problems: the Confounding Index (CI). <i>ARTIFICIAL INTELLIGENCE IN MEDICINE</i></p> <p>32. Davide Bacciu, Federico Errica and Alessio Micheli (2020), Probabilistic Learning on Graphs via Contextual Architectures, <i>Journal of Machine Learning Research</i>, Vol 21(134), pp. 1–39</p> <p>33. Antonio Carta, Alessandro Sperduti, Davide Bacciu (2020), Incremental Training of a Recurrent Neural Network Exploiting a Multi-Scale Dynamic Memory, In: Hutter F., Kersting K., Lijffijt J., Valera I. (eds) <i>Machine Learning and Knowledge Discovery in Databases. ECML PKDD 2020. Lecture Notes in Computer Science</i>, vol 12457. Springer</p> <p>34. Valenti, Andrea; Carta, Antonio; Bacciu, Davide (2020) Learning a Latent Space of Style-Aware Music Representations by Adversarial Autoencoders, <i>Proceedings of the 24th European Conference on Artificial Intelligence (ECAI 2020)</i>, <i>Frontiers in Artificial Intelligence and Applications</i>, Vol. 325, pp. 1563 – 1570</p> <p>35. Bacciu, Davide, CRECCHI, FRANCESCO (2019). Augmenting Recurrent Neural Networks Resilience by Dropout. <i>IEEE TRANSACTIONS ON NEURAL NETWORKS AND LEARNING SYSTEMS</i>, p. 1-7</p> <p>36. Davide Bacciu, Daniele Castellana (2019). Bayesian Mixtures of Hidden Tree Markov Models for Structured Data Clustering. <i>NEUROCOMPUTING</i>, vol. 342, p. 49-59</p> <p>37. Della Santina, Cosimo, Arapi, Visar, Averta, Giuseppe, Damiani, Francesca, Fiore, Gaia, Settini, Alessandro, Catalano, Manuel Giuseppe, Bacciu, Davide, Bicchi, Antonio, Bianchi, Matteo (2019). Learning from humans how to grasp: a data-driven architecture for autonomous grasping with anthropomorphic soft hands. <i>IEEE ROBOTICS AND AUTOMATION LETTERS</i>, vol. 4, p. 1533-1540</p> <p>38. Bacciu, Davide, Micheli, Alessio, Sperduti, Alessandro (2018). Generative Kernels for Tree-Structured Data. <i>IEEE TRANSACTIONS ON NEURAL NETWORKS AND LEARNING SYSTEMS</i>, vol. 29, p. 4932-4946</p> <p>39. Bacciu, Davide, ERRICA, FEDERICO, Micheli, Alessio (2018). Contextual graph markov model: A deep and generative approach to graph processing. In: <i>35th International Conference on Machine Learning, ICML 2018</i></p> <p>40. Bacciu Davide, COLOMBO, MICHELE, Morelli Davide, PLANS CASAL, DAVID (2018). Randomized neural networks for preference learning with physiological data. <i>NEUROCOMPUTING</i>, vol. 298</p> <p>41. BACCIU, DAVIDE, Paolo Barsocchi, CHESSA, STEFANO, GALLICCHIO, CLAUDIO, MICHELI, ALESSIO (2014). An experimental characterization of reservoir computing in ambient assisted living applications. <i>NEURAL COMPUTING &amp; APPLICATIONS</i>, vol. 24, p. 1451-1464</p> <p>42. BACCIU, DAVIDE, MICHELI, ALESSIO, Alessandro Sperduti (2013). Compositional generative mapping for tree-structured data - Part II: Topographic projection model. <i>IEEE TRANSACTIONS ON NEURAL NETWORKS AND LEARNING SYSTEMS</i>, vol. 24, p. 231-247,</p> <p>43. BACCIU, DAVIDE, Terence A. Etchells, Paulo J. G. Lisboa, Joe Whittaker (2013). Efficient identification of independence networks using mutual information. <i>COMPUTATIONAL STATISTICS</i>, vol. 28, p. 621-646</p> <p>44. Bacciu D., Micheli A., Sperduti A. (2012). Compositional Generative Mapping for Tree-Structured Data - Part I: Bottom-Up Probabilistic Modeling of Trees.. <i>IEEE TRANSACTIONS ON NEURAL NETWORKS AND LEARNING SYSTEMS</i>, vol. 23, p. 1987-2002</p>
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According to law 679/2016 of the Regulation of the European Parliament of 27th April 2016, I hereby express my consent to process and use my data provided in this CV.

22/05/2024

Davide Bacciu

