Fabrizio **Silvestri**

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SUMMARY

Full Professor of Artificial Intelligence at Sapienza University of Rome, where I lead the RSTLess group (Robust, Safe, and Transparent Machine Learning) and coordinate the Ph.D. Programme in Data Science. Before Sapienza I spent eight years in industry, at Yahoo Labs, Facebook Search and Facebook (now Meta) AI, shipping production systems for sponsored search, query understanding and platform integrity.

Three lines of work define my research profile. **Retrieval and retrieval-augmented generation**: retrieval for RAG has to be designed around the LLM reader rather than classical relevance, together with the evaluation protocols that follow from it. **Geometric and graph machine learning**: sheaf neural networks for hypergraphs and recommendation, counterfactual explanations for graph models, and model merging with reduced task interference. **Safety and content integrity**: misinformation detection, learning with noisy labels, and child-safety models deployed at Meta.

More than 210 peer-reviewed publications, h-index 52, over 10,500 citations (Google Scholar, November 2026). Eight granted US patents. ECIR 2018 Test-of-Time Award and finalist for the ERCIM Cor Baayen Award. General Chair of ECIR 2025, Programme Committee Chair of CIKM 2026, ELLIS Fellow.

WORK EXPERIENCE

2021 – Now **Sapienza University of Rome** · *Full Professor of AI* Italy
Coordinator of the Ph.D. in Data Science. Head of the RSTLess research group (Robust, Safe, and Transparent Machine Learning).

2026 – Now **You.Com** · *Consultant on Search Engineering* Italy
Development of a New Search Technology for You.Com

2022 – Now **ISTI - CNR** · *Research Associate* Italy

2022 – 2023 **Spotify Technology S.A.** · *Consultant* Italy
Consulting on Graph Neural Network Technology

2019 – 2021 **Facebook AI** · *Research Scientist* London, United Kingdom
Project: AI for Integrity. Developed models in production for integrity products: Misinformation, and Abusive Accounts.

2016 – 2019 **Facebook Inc.** · *Software Engineer* London, United Kingdom
Project: Query Suggestions for Related Searches – Facebook Search Team.

2015 – 2016 **Yahoo! Labs** · *Principal Research Scientist* London, United Kingdom
Project: Gemini Sponsored Search

2013 – 2015 **Yahoo! Labs** · *Senior Research Scientist* Barcelona, Spain
Project: Gemini Sponsored Search

2009 – 2013 **ISTI-CNR** · *Research Scientist* Pisa, Italy
Project: Web Search and Query Log Mining

2004 – 2009 **ISTI-CNR** · *Postdoctoral Researcher* Pisa, Italy
Postdoc in Computer Science with Raffaele Perego. High-performance web search engines: caching, indexing, and query log mining.

EDUCATION

2004 **Ph.D. in Computer Science**. Advisor: Raffaele Perego, ISTI-CNR
Computer Science Dept., University of Pisa, Italy

2000 **M.Sc. in Computer Science**, Graduated Magna Cum Laude
University of Pisa, Italy

PUBLICATIONS

Summary More than 210 peer-reviewed publications: more than 80 at CORE A/A* conferences (SIGIR, CIKM, WWW, EMNLP, ECIR, ACL, KDD, RecSys, ICLR, NeurIPS, CVPR, WSDM) and more than 35 in Scimago Q1 computer-science journals. h-index 52, over 10,500 citations (Google Scholar, November 2026).

Books

2009 **FNTIR** **Fabrizio Silvestri**. 2009. Mining Query Logs: Turning Search Usage Data into Knowledge. *Foundations and Trends in Information Retrieval* 4, 1-2 (2009), 1–174. https://doi.org/10.1561/1500000013

Journals

2026 **NPJAI** Flavio Giorgi, **Fabrizio Silvestri**, and Gabriele Tolomei. 2026. Unified counterfactual explainer for graph neural networks. *npj Artificial Intelligence* 2, 1 (2026), Article 79. https://doi.org/10.1038/s44387-026-00135-w

PLOS Francesca Pezzuti, Ophir Frieder, **Fabrizio Silvestri**, Sean MacAvaney, and Nicola Tonellotto. 2026. How AI agents search. *PLOS ONE* 21, 10 (2026), e0360157. https://doi.org/10.1371/journal.pone.0360157

OSNEM Matteo Silvestri, Edoardo Gabrielli, **Fabrizio Silvestri**, and Gabriele Tolomei. 2026. The Right to Hide: Masking Community Affiliation via Minimal Graph Rewiring. *Online Social Networks and Media* 55 (2026), Article 100357. https://doi.org/10.1016/j.osnem.2026.100357

TORS Alessandro Sbandi, Federico Siciliano, and **Fabrizio Silvestri**. 2026. Balancing the Diversity-Coverage Trade-off in Graph-based Recommendations for Cold-Start Industrial Applications. *ACM Transactions on Recommender Systems* 5, 2 (2026), 1–29. https://doi.org/10.1145/3796509

ISF Marco Salmè, Federico Siciliano, **Fabrizio Silvestri**, Paolo Soda, Rosa Sicilia, and Valerio Guarrasi. 2026. Concept-Enhanced Multimodal RAG: Towards Interpretable and Accurate Radiology Report Generation. *Information Systems Frontiers* (2026). Online first. https://doi.org/10.1007/s10796-026-10741-3

TAI Maria Sofia Bucarelli, Antonio Purificato, Andrea Bacciu, Lucas Cassano, Federico Siciliano, Anil Nelakanti, Amin Mantrach, and **Fabrizio Silvestri**. 2026. When Annotators Disagree: A Principled Approach to Learning with Noisy Labels. *IEEE Transactions on Artificial Intelligence* 7, 8 (2026), 4626–4640. https://doi.org/10.1109/tai.2026.3666527

TORS Alessandro Sbandi, Nina Kaploukhaya, Federico Siciliano, Aris Anagnostopoulos, and **Fabrizio Silvestri**. 2026. CRAB: Churn Reduction Agent Based via Reinforcement Learning. *ACM Transactions on Recommender Systems* 5, 2 (2026), 1–24. https://doi.org/10.1145/3814953

	TCSS	Jacopo Lenti, **Fabrizio Silvestri**, and Gianmarco De Francisci Morales. 2026. Variational Inference of Parameters in Opinion Dynamics Models. *IEEE Transactions on Computational Social Systems* 13, 5 (2026), 6670–6681. https://doi.org/10.1109/tcss.2025.3640692
	TORS	Ziheng Chen, Jin Huang, **Fabrizio Silvestri**, Yongfeng Zhang, Hongshik Ahn, and Gabriele Tolomei. 2026. Joint Factual and Counterfactual Explanations for Top-k GNN-based Recommendations. *ACM Transactions on Recommender Systems* 4, 2 (2026), 1–26. https://doi.org/10.1145/3731683
	TORS	Antonio Purificato, Giulia Cassarà, Federico Siciliano, Pietro Liò, and **Fabrizio Silvestri**. 2026. Sheaf4Rec: Sheaf Neural Networks for Graph-based Recommender Systems. *ACM Transactions on Recommender Systems* 4, 2 (2026), 1–26. https://doi.org/10.1145/3742898
2025	OSNEM	Syrine Enneifer, Federica Baccini, Federico Siciliano, Irene Amerini, and **Fabrizio Silvestri**. 2025. The Perils of Stealthy Data Poisoning Attacks in Misogynistic Content Moderation. *Online Social Networks and Media* 50 (2025), Article 100334. https://doi.org/10.1016/j.osnem.2025.100334
	ACCESS	Giovanni Trappolini, Antonio Purificato, Federico Siciliano, Luigi D'Addona, Anna Maria Spagnolo, Domenico Dato, and **Fabrizio Silvestri**. 2025. Quantized Auto Encoder-Based Anomaly Detection for Multivariate Time Series Data in 5G Networks. *IEEE Access* 13 (2025), 82668–82679. https://doi.org/10.1109/access.2025.3568133
	ACCESS	Filippo Betello, Antonio Purificato, Federico Siciliano, Giovanni Trappolini, Andrea Bacciu, Nicola Tonellotto, and **Fabrizio Silvestri**. 2025. A Reproducible Analysis of Sequential Recommender Systems. *IEEE Access* 13 (2025), 5762–5772. https://doi.org/10.1109/access.2024.3522049
	JCMIG	Giulia Di Teodoro, Federico Siciliano, Valerio Guarrasi, Anne-Mieke Vandamme, Valeria Ghisetti, Anders Sönnerborg, Maurizio Zazzi, **Fabrizio Silvestri**, and Laura Palagi. 2025. A graph neural network-based model with Out-of-Distribution Robustness for enhancing Antiretroviral Therapy Outcome Prediction for HIV-1. *Computerized Medical Imaging and Graphics* 120 (2025), Article 102484. https://doi.org/10.1016/j.compmedimag.2024.102484
	TAI	Maria Movin, Federico Siciliano, Rui Ferreira, **Fabrizio Silvestri**, and Gabriele Tolomei. 2025. Consistent Counterfactual Explanations via Anomaly Control and Data Coherence. *IEEE Transactions on Artificial Intelligence* 6, 4 (2025), 794–804. https://doi.org/10.1109/tai.2024.3496616
2024	NN	Maria Sofia Bucarelli, Giuseppe Alessio D'Inverno, Monica Bianchini, Franco Scarselli, and **Fabrizio Silvestri**. 2024. A topological description of loss surfaces based on Betti Numbers. *Neural Networks* 178 (2024), Article 106465. https://doi.org/10.1016/j.neunet.2024.106465
	TAI	Giovanni Trappolini, Valentino Maiorca, Silvio Severino, Emanuele Rodolà, **Fabrizio Silvestri**, and Gabriele Tolomei. 2024. Sparse Vicious Attacks on Graph Neural Networks. *IEEE Transactions on Artificial Intelligence* 5, 5 (2024), 2293–2303. https://doi.org/10.1109/tai.2023.3319306
	TAI	Ziheng Chen, **Fabrizio Silvestri**, Gabriele Tolomei, Jia Wang, He Zhu, and Hongshik Ahn. 2024. Explain the Explainer: Interpreting Model-Agnostic Counterfactual Explanations of a Deep Reinforcement Learning Agent. *IEEE Transactions on Artificial Intelligence* 5, 4 (2024), 1443–1457. https://doi.org/10.1109/tai.2022.3223892

2023	OSNEM	Giorgio Barnabò, Federico Siciliano, Carlos Castillo, Stefano Leonardi, Preslav Nakov, Giovanni Da San Martino, and **Fabrizio Silvestri**. 2023. Deep active learning for misinformation detection using geometric deep learning. *Online Social Networks and Media* 33 (2023), Article 100244. https://doi.org/10.1016/j.osnem.2023.100244
	DAI	Giorgio Barnabò, Giovanni Trappolini, Lorenzo Lastilla, Cesare Campagnano, Angela Fan, Fabio Petroni, and **Fabrizio Silvestri**. 2023. CycleDRUMS: automatic drum arrangement for bass lines using CycleGAN. *Discover Artificial Intelligence* 3, 1 (2023), Article 4. https://doi.org/10.1007/s44163-023-00047-7
2022	CACM	Alon Y. Halevy, Cristian Canton-Ferrer, Hao Ma, Umut Ozertem, Patrick Pantel, Marzieh Saeidi, **Fabrizio Silvestri**, and Ves Stoyanov. 2022. Preserving integrity in online social networks. *Communications of the ACM* 65, 2 (2022), 92–98. https://doi.org/10.1145/3462671
2021	InfSci	Nicola Tonellotto, Alberto Gotta, Franco Maria Nardini, Daniele Gadler, and **Fabrizio Silvestri**. 2021. Neural network quantization in federated learning at the edge. *Information Sciences* 575 (2021), 417–436. https://doi.org/10.1016/j.ins.2021.06.039
	PVLDB	James Thorne, Majid Yazdani, Marzieh Saeidi, **Fabrizio Silvestri**, Sebastian Riedel, and Alon Y. Halevy. 2021. From Natural Language Processing to Neural Databases. *Proceedings of the VLDB Endowment* 14, 6 (2021), 1033–1039. https://doi.org/10.14778/3447689.3447706
	TKDE	Gabriele Tolomei and **Fabrizio Silvestri**. 2021. Generating Actionable Interpretations from Ensembles of Decision Trees. *IEEE Transactions on Knowledge and Data Engineering* 33, 4 (2021), 1540–1553. https://doi.org/10.1109/tkde.2019.2945326
2018	TIST	Claudio Lucchese, Franco Maria Nardini, Salvatore Orlando, Raffaele Perego, **Fabrizio Silvestri**, and Salvatore Trani. 2018. X-CLEaVER: Learning Ranking Ensembles by Growing and Pruning Trees. *ACM Transactions on Intelligent Systems and Technology* 9, 6 (2018), 1–26. https://doi.org/10.1145/3205453
2017	DMKD	Aris Anagnostopoulos, Reem Atassi, Luca Becchetti, Adriano Fazzone, and **Fabrizio Silvestri**. 2017. Tour recommendation for groups. *Data Mining and Knowledge Discovery* 31, 5 (2017), 1157–1188. https://doi.org/10.1007/s10618-016-0477-7
	InfSci	Xiao Bai, Berkant Barla Cambazoglu, Francesco Gullo, Amin Mantrach, and **Fabrizio Silvestri**. 2017. Exploiting search history of users for news personalization. *Information Sciences* 385-386 (2017), 125–137. https://doi.org/10.1016/j.ins.2016.12.038
	SNAM	Mauro Coletto, Luca Maria Aiello, Claudio Lucchese, and **Fabrizio Silvestri**. 2017. Adult content consumption in online social networks. *Social Network Analysis and Mining* 7, 1 (2017), Article 28. https://doi.org/10.1007/s13278-017-0449-y
2015	IP&M	Roi Blanco, Gianmarco De Francisci Morales, and **Fabrizio Silvestri**. 2015. IntoNews: Online News Retrieval using Closed Captions. *Information Processing & Management* 51, 1 (2015), 148–162. https://doi.org/10.1016/j.ipm.2014.07.010
	TIST	Cristina Ioana Muntean, Franco Maria Nardini, **Fabrizio Silvestri**, and Ranieri Baraglia. 2015. On Learning Prediction Models for Tourists Paths. *ACM Transactions on Intelligent Systems and Technology* 7, 1 (2015), 1–34. https://doi.org/10.1145/2766459
2013	InfSci	Giacomo Berardi, Andrea Esuli, Fabrizio Sebastiani, and **Fabrizio Silvestri**. 2013. Endorsements and Rebuttals in Blog Distillation. *Information Sciences* 249 (2013), 38–47. https://doi.org/10.1016/j.ins.2013.05.037

	TOIS	Claudio Lucchese, Salvatore Orlando, Raffaele Perego, **Fabrizio Silvestri**, and Gabriele Tolomei. 2013. Discovering Tasks from Search Engine Query Logs. *ACM Transactions on Information Systems* 31, 3 (2013), 1–43. https://doi.org/10.1145/2493175.2493179
2012	**IP&M**	Daniele Broccolo, Lorenzo Marcon, Franco Maria Nardini, Raffaele Perego, and **Fabrizio Silvestri**. 2012. Generating suggestions for queries in the long tail with an inverted index. *Information Processing & Management* 48, 2 (2012), 326–339. https://doi.org/10.1016/j.ipm.2011.07.005
	IP&M	Gabriele Capannini, **Fabrizio Silvestri**, and Ranieri Baraglia. 2012. Sorting on GPUs for large scale datasets: A thorough comparison. *Information Processing & Management* 48, 5 (2012), 903–917. https://doi.org/10.1016/j.ipm.2010.11.010
2011	**PVLDB**	Gabriele Capannini, Franco Maria Nardini, Raffaele Perego, and **Fabrizio Silvestri**. 2011. Efficient Diversification of Web Search Results. *Proceedings of the VLDB Endowment* 4, 7 (2011), 451–459. https://doi.org/10.14778/1988776.1988781
2010	**TOIS**	Diego Puppin, **Fabrizio Silvestri**, Raffaele Perego, and Ricardo A. Baeza-Yates. 2010. Tuning the capacity of search engines: Load-driven routing and incremental caching to reduce and balance the load. *ACM Transactions on Information Systems* 28, 2 (2010), 1–36. https://doi.org/10.1145/1740592.1740593
2008	**TWEB**	Ricardo A. Baeza-Yates, Aristides Gionis, Flavio P. Junqueira, Vanessa Murdock, Vassilis Plachouras, and **Fabrizio Silvestri**. 2008. Design trade-offs for search engine caching. *ACM Transactions on the Web* 2, 4 (2008), 1–28. https://doi.org/10.1145/1409220.1409223
2007	**CACM**	Ranieri Baraglia and **Fabrizio Silvestri**. 2007. Dynamic personalization of web sites without user intervention. *Communications of the ACM* 50, 2 (2007), 63–67. https://doi.org/10.1145/1216016.1216022
2006	**TOIS**	Tiziano Fagni, Raffaele Perego, **Fabrizio Silvestri**, and Salvatore Orlando. 2006. Boosting the performance of Web search engines: Caching and prefetching query results by exploiting historical usage data. *ACM Transactions on Information Systems* 24, 1 (2006), 51–78. https://doi.org/10.1145/1125857.1125859
	CCPE	**Fabrizio Silvestri**, Diego Puppin, Domenico Laforenza, and Salvatore Orlando. 2006. Toward a search architecture for software components. *Concurrency and Computation: Practice and Experience* 18, 10 (2006), 1317–1331. https://doi.org/10.1002/cpe.995

Selected Conference Papers

2026	**EMNLP**	Antonio Purificato, Maria Sofia Bucarelli, Andrea Bacciu, Amin Mantrach, and **Fabrizio Silvestri**. 2026. QUORUM: QUality-Optimized Routing Using Multiple annotators. In *Proceedings of the 2026 Conference on Empirical Methods in Natural Language Processing* (EMNLP '26). Association for Computational Linguistics, 26873–26890. https://doi.org/10.18653/2026.emnlp-main.1172
	EMNLP	Antonio Purificato, Maria Sofia Bucarelli, Andrea Bacciu, **Fabrizio Silvestri**, and Amin Mantrach. 2026. Select, Label, Evaluate: Active Testing in NLP. In *Proceedings of the 2026 Conference on Empirical Methods in Natural Language Processing* (EMNLP '26). Association for Computational Linguistics, 26566–26584. https://doi.org/10.18653/2026.emnlp-main.1160
	EMNLP	Farooq Ahmad Wani, Alessandro Suglia, Rohit Saxena, Aryo Pradipta Gema, Wai-Chung Kwan, Fazl Barez, Maria Sofia Bucarelli, **Fabrizio Silvestri**, and Pasquale Minervini. 2026. Same Answer, Different Representations: Hidden instability in VLMs. In *Proceedings of the 2026 Conference on Empirical Methods in Natural Language Processing* (EMNLP '26). Association for Computational Linguistics, 41059–41087. https://doi.org/10.18653/2026.emnlp-main.1803

EMNLP Marco Salmè, Federico Siciliano, **Fabrizio Silvestri**, Paolo Soda, Rosa Sicilia, and Valerio Guarrasi. 2026. I Wrote This Because of That: Interpretable Radiology Report Generation via Visual Prototypes. In *Findings of the Association for Computational Linguistics: EMNLP 2026*. Association for Computational Linguistics, 36511–36527. https://doi.org/10.18653/2026.findings-emnlp.1708

CIKM Alessandro Sbandi, Federico Siciliano, and **Fabrizio Silvestri**. 2026. SA-GSL: Simulated Annealing for Graph Structure Learning. In *Proceedings of the 35th ACM International Conference on Information and Knowledge Management* (CIKM '26). ACM, 4212–4223. https://doi.org/10.1145/3799682.3840825

CIKM Filippo Betello, Antonio Purificato, Nicola Tonellotto, and **Fabrizio Silvestri**. 2026. SURF: Subtractive Updates for Recommender Forgetting. In *Proceedings of the 35th ACM International Conference on Information and Knowledge Management* (CIKM '26). ACM, 319–328. https://doi.org/10.1145/3799682.3840731

ECCV Ludovica Schaerf, Antonio Purificato, Piera Riccio, **Fabrizio Silvestri**, and Noa García. 2026. Art Beyond Semantics: Sheaf-Informed Contrastive Learning for Multi-relational Representations. In *Computer Vision – ECCV 2026* (ECCV '26; Lecture Notes in Computer Science). Springer, 273–290. https://doi.org/10.1007/978-3-032-37324-3_15

COLM Matteo Silvestri, Fabiano Veglianti, Flavio Giorgi, **Fabrizio Silvestri**, and Gabriele Tolomei. 2026. When Large Language Models Know the Table: A Framework for Assessing Data Contamination in Tabular Datasets. In *Proceedings of the Third Conference on Language Modeling* (COLM '26). https://proceedings.colm.cc/paper_files/paper/2026/hash/d80f533473c2dc8dd6984ceffc3ed3fd-Abstract-Conference.html

SIGIR Giulia Di Teodoro, Federico Siciliano, Nicola Tonellotto, and **Fabrizio Silvestri**. 2026. CATS: Cluster-Aware Thompson Sampling for Negative Mining in Sequential Recommendation. In *Proceedings of the 49th International ACM SIGIR Conference on Research and Development in Information Retrieval* (SIGIR '26). ACM, 280–289. https://doi.org/10.1145/3805712.3809539

SIGIR Maria Diana Calugaru, Federico Siciliano, Francesca Pezzuti, Nicola Tonellotto, and **Fabrizio Silvestri**. 2026. Load-sensitive Selective Pruning in Dense Retrieval. In *Proceedings of the 49th International ACM SIGIR Conference on Research and Development in Information Retrieval* (SIGIR '26). ACM, 3630–3634. https://doi.org/10.1145/3805712.3809875

ECML PKDD Mostafa Mozafari, Farooq Ahmad Wani, **Fabrizio Silvestri**, and Maria Sofia Bucarelli. 2026. Subtract the Corruption: Training-Data-Free Corrective Machine Unlearning using Task Arithmetic. In *Machine Learning and Knowledge Discovery in Databases. Research Track* (ECML PKDD '26; Lecture Notes in Computer Science). Springer, 340–355. https://doi.org/10.1007/978-3-032-37657-2_19

ACL Christian Giannetti, Giovanni Trappolini, Nicola Tonellotto, **Fabrizio Silvestri**, and Pietro Liò. 2026. The Mechanics of Interference: Defusing Distractors in RAG via Sparse Autoencoder Interventions. In *Findings of the Association for Computational Linguistics: ACL 2026*. Association for Computational Linguistics, 11999–12007. https://doi.org/10.18653/v1/2026.findings-acl.583

ACL Maximo Eduardo Rulli, Simone Petruzzi, Edoardo Michielon, **Fabrizio Silvestri**, Simone Scardapane, and Alessio Devoto. 2026. Attention Sinks in Diffusion Language Models. In *Findings of the Association for Computational Linguistics: ACL 2026*. Association for Computational Linguistics, 43244–43256. https://doi.org/10.18653/v1/2026.findings-acl.2145

KDD Flavio Giorgi, Fabiano Veglianti, **Fabrizio Silvestri**, and Gabriele Tolomei. 2026. Countering Overfitting with Counterfactual Examples. In *Proceedings of the 32nd ACM SIGKDD Conference on Knowledge Discovery and Data Mining, Volume 1* (KDD '26). ACM, 302–313. https://doi.org/10.1145/3770854.3780243

AISTATS Antonio Purificato, Maria Sofia Bucarelli, Anil Kumar Nelakanti, Andrea Bacciu, **Fabrizio Silvestri**, and Amin Mantrach. 2026. The Majority Vote Paradigm Shift: When Popular Meets Optimal. In *Proceedings of the 29th International Conference on Artificial Intelligence and Statistics* (AISTATS '26; Proceedings of Machine Learning Research, Vol. 300). PMLR, 1711–1719. https://proceedings.mlr.press/v300/purificato26a.html

AISTATS Andrea Drago, Maria Sofia Bucarelli, Francesco Caso, Marius Michetti, Federico Siciliano, **Fabrizio Silvestri**, and Luca Becchetti. 2026. Rank Lifting and Random Non-Linear Maps. In *Proceedings of the 29th International Conference on Artificial Intelligence and Statistics* (AISTATS '26; Proceedings of Machine Learning Research, Vol. 300). PMLR, 2881–2889. https://proceedings.mlr.press/v300/drago26a.html

ICLR Emanuele Mule, Stefano Fiorini, Antonio Purificato, Federico Siciliano, Stefano Coniglio, and **Fabrizio Silvestri**. 2026. Directional Sheaf Hypergraph Networks: Unifying Learning on Directed and Undirected Hypergraphs. In *The Fourteenth International Conference on Learning Representations* (ICLR '26). OpenReview.net. https://openreview.net/forum?id=d1hQkcDy7c

ICLR Donato Crisostomi, Alessandro Zirilli, Antonio Andrea Gargiulo, Maria Sofia Bucarelli, Simone Scardapane, **Fabrizio Silvestri**, Iacopo Masi, and Emanuele Rodolà. 2026. MASS: MoErging through Adaptive Subspace Selection. In *The Fourteenth International Conference on Learning Representations* (ICLR '26). OpenReview.net. https://openreview.net/forum?id=CRBt6DNaBE

ICLR Francesco Caso, Samuele Fonio, Simone Monaco, Nicola Saccomanno, and **Fabrizio Silvestri**. 2026. Composable Sparse Subnetworks via Maximum-Entropy Principle. In *The Fourteenth International Conference on Learning Representations* (ICLR '26). OpenReview.net. https://openreview.net/forum?id=IHwx5ioIP2

EACL Giovanni Trappolini, Florin Cuconasu, Simone Filice, Yoelle Maarek, and **Fabrizio Silvestri**. 2026. Redefining Retrieval Evaluation in the Era of LLMs. In *Proceedings of the 19th Conference of the European Chapter of the Association for Computational Linguistics (Volume 1: Long Papers)* (EACL '26). Association for Computational Linguistics, 8359–8375. https://doi.org/10.18653/v1/2026.eacl-long.391

EACL Giulio D'Erasmo, Cesare Campagnano, Antonio Mallia, Pierpaolo Brutti, Nicola Tonellotto, and **Fabrizio Silvestri**. 2026. Statistical Foundations of DIME: Risk Estimation for Practical Index Selection. In *Proceedings of the 19th Conference of the European Chapter of the Association for Computational Linguistics (Volume 2: Short Papers)* (EACL '26). Association for Computational Linguistics, 722–730. https://doi.org/10.18653/v1/2026.eacl-short.51

2025 NeurIPS Valeria Ruscio, Umberto Nanni, and **Fabrizio Silvestri**. 2025. What Are You Sinking? A Geometric Approach on Attention Sink. In *Advances in Neural Information Processing Systems 38* (NeurIPS '25). Curran Associates, Inc., 136877–136916. https://doi.org/10.52202/085713-4116

EMNLP Florin Cuconasu, Simone Filice, Guy Horowitz, Yoelle Maarek, and **Fabrizio Silvestri**. 2025. Do RAG Systems Really Suffer From Positional Bias?In *Proceedings of the 2025 Conference on Empirical Methods in Natural Language Processing* (EMNLP '25). Association for Computational Linguistics, 28010–28024. https://doi.org/10.18653/v1/2025.emnlp-main.1422

AISTATS Flavio Giorgi, Cesare Campagnano, **Fabrizio Silvestri**, and Gabriele Tolomei. 2025. Natural Language Counterfactual Explanations for Graphs Using Large Language Models. In *Proceedings of the 28th International Conference on Artificial Intelligence and Statistics* (AISTATS '25; Proceedings of Machine Learning Research, Vol. 258). PMLR, 3565–3573. https://proceedings.mlr.press/v258/giorgi25a.html

ACL Valeria Ruscio, Umberto Nanni, and **Fabrizio Silvestri**. 2025. Beyond Position: the emergence of wavelet-like properties in Transformers. In *Proceedings of the 63rd Annual Meeting of the Association for Computational Linguistics (Volume 1: Long Papers)* (ACL '25). Association for Computational Linguistics, 6074–6088. https://doi.org/10.18653/v1/2025.acl-long.303 **SAC Highlights**

RecSoGood Antonio Purificato and **Fabrizio Silvestri**. 2025. Eco-Aware Graph Neural Networks for Sustainable Recommendations. In *Recommender Systems for Sustainability and Social Good* (RecSoGood '25; Communications in Computer and Information Science). Springer, 111–122. https://doi.org/10.1007/978-3-031-87654-7_11

RecSys Alessandro Sbandi, Federico Siciliano, and **Fabrizio Silvestri**. 2025. TIM-Rec: Explicit Sparse Feedback on Multi-Item Upselling Recommendations in an Industrial Dataset of Telco Calls. In *Proceedings of the Nineteenth ACM Conference on Recommender Systems* (RecSys '25). ACM, 865–873. https://doi.org/10.1145/3705328.3748150

SIGIR Cesare Campagnano, Antonio Mallia, and **Fabrizio Silvestri**. 2025. Unveiling DIME: Reproducibility, Generalizability, and Formal Analysis of Dimension Importance Estimation for Dense Retrieval. In *Proceedings of the 48th International ACM SIGIR Conference on Research and Development in Information Retrieval* (SIGIR '25). ACM, 3367–3376. https://doi.org/10.1145/3726302.3730318

CVPR Antonio Andrea Gargiulo, Donato Crisostomi, Maria Sofia Bucarelli, Simone Scardapane, **Fabrizio Silvestri**, and Emanuele Rodolà. 2025. Task Singular Vectors: Reducing Task Interference in Model Merging. In *2025 IEEE/CVF Conference on Computer Vision and Pattern Recognition* (CVPR '25). IEEE, 18695–18705. https://doi.org/10.1109/cvpr52734.2025.01742

WACV Andrea Alfarano, Alberto Alfarano, Linda Friso, Andrea Bacciu, Irene Amerini, and **Fabrizio Silvestri**. 2025. STLight: A Fully Convolutional Approach for Efficient Predictive Learning by Spatio-Temporal Joint Processing. In *2025 IEEE/CVF Winter Conference on Applications of Computer Vision* (WACV '25). IEEE, 1090–1100. https://doi.org/10.1109/wacv61041.2025.00114

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2024

IJCNN Farooq Ahmad Wani, Maria Sofia Bucarelli, and **Fabrizio Silvestri**. 2024. Learning with Noisy Labels through Learnable Weighting and Centroid Similarity. In *2024 International Joint Conference on Neural Networks* (IJCNN '24). IEEE, 1–9. https://doi.org/10.1109/ijcnn60899.2024.10650366

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CIKM — Enrico Palumbo, Andreas Damianou, Alice Wang, Alva Liu, Ghazal Fazelnia, Francesco Fabbri, Rui Ferreira, **Fabrizio Silvestri**, Hugues Bouchard, Claudia Hauff, Mounia Lalmas, Ben Carterette, Praveen Chandar, and David Nyhan. 2023. Graph Learning for Exploratory Query Suggestions in an Instant Search System. In *Proceedings of the 32nd ACM International Conference on Information and Knowledge Management* (CIKM '23). ACM, 4780–4786. https://doi.org/10.1145/3583780.3615481

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	COLING	Firoj Alam, Stefano Cresci, Tanmoy Chakraborty, **Fabrizio Silvestri**, Dimiter Dimitrov, Giovanni Da San Martino, Shaden Shaar, Hamed Firooz, and Preslav Nakov. 2022. A Survey on Multimodal Disinformation Detection. In *Proceedings of the 29th International Conference on Computational Linguistics* (COLING '22). International Committee on Computational Linguistics, 6625–6643. https://aclanthology.org/2022.coling-1.576/
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	IJCAI	Shivam Sharma, Firoj Alam, Md. Shad Akhtar, Dimitar Dimitrov, Giovanni Da San Martino, Hamed Firooz, Alon Y. Halevy, **Fabrizio Silvestri**, Preslav Nakov, and Tanmoy Chakraborty. 2022. Detecting and Understanding Harmful Memes: A Survey. In *Proceedings of the Thirty-First International Joint Conference on Artificial Intelligence* (IJCAI '22). IJCAI, 5597–5606. https://doi.org/10.24963/ijcai.2022/781
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2020	**EMNLP**	Luca Massarelli, Fabio Petroni, Aleksandra Piktus, Myle Ott, Tim Rocktäschel, Vassilis Plachouras, **Fabrizio Silvestri**, and Sebastian Riedel. 2020. How Decoding Strategies Affect the Verifiability of Generated Text. In *Findings of the Association for Computational Linguistics: EMNLP 2020*. Association for Computational Linguistics, 223–235. https://doi.org/10.18653/v1/2020.findings-emnlp.22
2019	**NAACL**	Aleksandra Piktus, Necati Bora Edizel, Piotr Bojanowski, Edouard Grave, Rui Ferreira, and **Fabrizio Silvestri**. 2019. Misspelling Oblivious Word Embeddings. In *Proceedings of the 2019 Conference of the North American Chapter of the Association for Computational Linguistics: Human Language Technologies, Volume 1 (Long and Short Papers)* (NAACL '19). Association for Computational Linguistics, 3226–3234. https://doi.org/10.18653/v1/n19-1326
2017	**KDD**	Gabriele Tolomei, **Fabrizio Silvestri**, Andrew Haines, and Mounia Lalmas. 2017. Interpretable Predictions of Tree-based Ensembles via Actionable Feature Tweaking. In *Proceedings of the 23rd ACM SIGKDD International Conference on Knowledge Discovery and Data Mining* (KDD '17). ACM, 465–474. https://doi.org/10.1145/3097983.3098039
2016	**CIKM**	Luca Maria Aiello, Ioannis Arapakis, Ricardo Baeza-Yates, Xiao Bai, Nicola Barbieri, Amin Mantrach, and **Fabrizio Silvestri**. 2016. The Role of Relevance in Sponsored Search. In *Proceedings of the 25th ACM International on Conference on Information and Knowledge Management* (CIKM '16). ACM, 185–194. https://doi.org/10.1145/2983323.2983840
	WWW	Nicola Barbieri, **Fabrizio Silvestri**, and Mounia Lalmas. 2016. Improving Post-Click User Engagement on Native Ads via Survival Analysis. In *Proceedings of the 25th International Conference on World Wide Web* (WWW '16). International World Wide Web Conferences Steering Committee, 761–770. https://doi.org/10.1145/2872427.2883092
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	SIGIR	Mihajlo Grbovic, Nemanja Djuric, Vladan Radosavljevic, **Fabrizio Silvestri**, Ricardo Baeza-Yates, Andrew Feng, Erik Ordentlich, Lee Yang, and Gavin Owens. 2016. Scalable Semantic Matching of Queries to Ads in Sponsored Search Advertising. In *Proceedings of the 39th International ACM SIGIR Conference on Research and Development in Information Retrieval* (SIGIR '16). ACM, 375–384. https://doi.org/10.1145/2911451.2911538
2015	**WSDM**	Ricardo Baeza-Yates, Di Jiang, **Fabrizio Silvestri**, and Beverly Harrison. 2015. Predicting The Next App That You Are Going To Use. In *Proceedings of the Eighth ACM International Conference on Web Search and Data Mining* (WSDM '15). ACM, 285–294. https://doi.org/10.1145/2684822.2685302

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	SIGIR	Mihajlo Grbovic, Nemanja Djuric, Vladan Radosavljevic, **Fabrizio Silvestri**, and Narayan Bhamidipati. 2015. Context- and Content-aware Embeddings for Query Rewriting in Sponsored Search. In *Proceedings of the 38th International ACM SIGIR Conference on Research and Development in Information Retrieval* (SIGIR '15). ACM, 383–392. https://doi.org/10.1145/2766462.2767709
	KDD	Mounia Lalmas, Janette Lehmann, Guy Shaked, **Fabrizio Silvestri**, and Gabriele Tolomei. 2015. Promoting Positive Post-click Experience for In-Stream Yahoo Gemini Users. In *Proceedings of the 21th ACM SIGKDD International Conference on Knowledge Discovery and Data Mining* (KDD '15). ACM, 1929–1938. https://doi.org/10.1145/2783258.2788581
2013	**CIKM**	Daniele Broccolo, Craig Macdonald, Salvatore Orlando, Iadh Ounis, Raffaele Perego, **Fabrizio Silvestri**, and Nicola Tonellotto. 2013. Load-Sensitive Selective Pruning for Distributed Search. In *Proceedings of the 22nd ACM International Conference on Information & Knowledge Management* (CIKM '13). ACM, 379–388. https://doi.org/10.1145/2505515.2505699
2012	**ECIR**	Claudio Lucchese, Raffaele Perego, **Fabrizio Silvestri**, Hossein Vahabi, and Rossano Venturini. 2012. How Random Walks Can Help Tourism. In *Advances in Information Retrieval* (ECIR '12; Lecture Notes in Computer Science). Springer, 195–206. https://doi.org/10.1007/978-3-642-28997-2_17
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2011	**WSDM**	Claudio Lucchese, Salvatore Orlando, Raffaele Perego, **Fabrizio Silvestri**, and Gabriele Tolomei. 2011. Identifying Task-based Sessions in Search Engine Query Logs. In *Proceedings of the Fourth ACM International Conference on Web Search and Data Mining* (WSDM '11). ACM, 277–286. https://doi.org/10.1145/1935826.1935875
	EDBT	Diego Ceccarelli, Claudio Lucchese, Salvatore Orlando, Raffaele Perego, and **Fabrizio Silvestri**. 2011. Caching query-biased snippets for efficient retrieval. In *Proceedings of the 14th International Conference on Extending Database Technology* (EDBT '11). ACM, 93–104. https://doi.org/10.1145/1951365.1951379
2010	**CIKM**	**Fabrizio Silvestri** and Rossano Venturini. 2010. VSEncoding: efficient coding and fast decoding of integer lists via dynamic programming. In *Proceedings of the 19th ACM International Conference on Information and Knowledge Management* (CIKM '10). ACM, 1219–1228. https://doi.org/10.1145/1871437.1871592

2009 **RecSys** Ranieri Baraglia, Fidel Cacheda, Victor Carneiro, Diego Fernandez, Vreixo Formoso, Raffaele Perego, and **Fabrizio Silvestri**. 2009. Search shortcuts: a new approach to the recommendation of queries. In *Proceedings of the Third ACM Conference on Recommender Systems* (RecSys '09). ACM, 77–84. https://doi.org/10.1145/1639714.1639729

2007 **ECIR** **Fabrizio Silvestri**. 2007. Sorting Out the Document Identifier Assignment Problem. In *Advances in Information Retrieval* (ECIR '07; Lecture Notes in Computer Science). Springer, 101–112. https://doi.org/10.1007/978-3-540-71496-5_12 **Best Paper Award** **Test of Time Award**

ICDE Ricardo A. Baeza-Yates, Carlos Castillo, Flavio Junqueira, Vassilis Plachouras, and **Fabrizio Silvestri**. 2007. Challenges on Distributed Web Retrieval. In *2007 IEEE 23rd International Conference on Data Engineering* (ICDE '07). IEEE, 6–20. https://doi.org/10.1109/icde.2007.367846 **Invited Paper**

SIGIR Ricardo A. Baeza-Yates, Aristides Gionis, Flavio Junqueira, Vanessa Murdock, Vassilis Plachouras, and **Fabrizio Silvestri**. 2007. The impact of caching on search engines. In *Proceedings of the 30th Annual International ACM SIGIR Conference on Research and Development in Information Retrieval* (SIGIR '07). ACM, 183–190. https://doi.org/10.1145/1277741.1277775

SIGIR Carlos Castillo, Debora Donato, Aristides Gionis, Vanessa Murdock, and **Fabrizio Silvestri**. 2007. Know your neighbors: web spam detection using the web topology. In *Proceedings of the 30th Annual International ACM SIGIR Conference on Research and Development in Information Retrieval* (SIGIR '07). ACM, 423–430. https://doi.org/10.1145/1277741.1277814

2005 **Euro-Par** Diego Puppin, Stefano Moncelli, Ranieri Baraglia, Nicola Tonellotto, and **Fabrizio Silvestri**. 2005. A Grid Information Service Based on Peer-to-Peer. In *Euro-Par 2005 Parallel Processing* (Euro-Par '05; Lecture Notes in Computer Science). Springer, 454–464. https://doi.org/10.1007/11549468_52

2004 **Euro-Par** Tiziano Fagni, Raffaele Perego, and **Fabrizio Silvestri**. 2004. A Highly Scalable Parallel Caching System for Web Search Engine Results. In *Euro-Par 2004 Parallel Processing* (Euro-Par '04; Lecture Notes in Computer Science). Springer, 347–354. https://doi.org/10.1007/978-3-540-27866-5_45

SIGIR **Fabrizio Silvestri**, Salvatore Orlando, and Raffaele Perego. 2004. Assigning identifiers to documents to enhance the clustering property of fulltext indexes. In *Proceedings of the 27th Annual International ACM SIGIR Conference on Research and Development in Information Retrieval* (SIGIR '04). ACM, 305–312. https://doi.org/10.1145/1008992.1009046

WI Ranieri Baraglia and **Fabrizio Silvestri**. 2004. An Online Recommender System for Large Web Sites. In *IEEE/WIC/ACM International Conference on Web Intelligence* (WI '04). IEEE, 199–205. https://doi.org/10.1109/wi.2004.10158 **Best Paper Award**

WI **Fabrizio Silvestri**, Diego Puppin, Domenico Laforenza, and Salvatore Orlando. 2004. A Search Architecture for Grid Software Components. In *IEEE/WIC/ACM International Conference on Web Intelligence* (WI '04). IEEE, 495–498. https://doi.org/10.1109/wi.2004.10026

2002 **Euro-Par** Salvatore Orlando, Paolo Palmerini, Raffaele Perego, and **Fabrizio Silvestri**. 2002. Scheduling High Performance Data Mining Tasks on a Data Grid Environment. In *Euro-Par 2002 Parallel Processing* (Euro-Par '02; Lecture Notes in Computer Science). Springer, 375–384. https://doi.org/10.1007/3-540-45706-2_49

ICDM Salvatore Orlando, Paolo Palmerini, Raffaele Perego, and **Fabrizio Silvestri**. 2002. Adaptive and Resource-Aware Mining of Frequent Sets. In *Proceedings of the 2002 IEEE International Conference on Data Mining* (ICDM '02). IEEE Computer Society, 338–345. https://doi.org/10.1109/icdm.2002.1183921

2001 **PARCO** Salvatore Orlando, Raffaele Perego, and **Fabrizio Silvestri**. 2001. Design of a Parallel and Distributed Web Search Engine. In *Parallel Computing* (PARCO '01). Imperial College Press, 197–204. https://doi.org/10.1142/9781860949630_0025
My Master Thesis

The complete list of my publications can be found on my:
Personal page (auto-synced from OpenAlex) – https://fabsilvestri.github.io/#publications
Google Scholar page – https://bit.ly/silvestri_scholar
DBLP page – https://bit.ly/silvestri_dblp

AWARDS

ELLIS Fellow Fellow of ELLIS, the European Laboratory for Learning and Intelligent Systems, since 2026.

Test-of-time Test-of-time Award at ECIR 2018. For the paper "Sorting Out the Document Identifier Assignment Problem". The paper was selected among those published more than 10 years before and according to the nomination the paper represents a milestone in Inverted Index compression. Nowadays, no paper on inverted index compression is published without firstly applying the technique presented in that paper.

Cor Baayen Finalist for the ERCIM Cor Baayen Award, the European prize for a promising young researcher in computer science and applied mathematics: selected as one of the two representatives from Italy for 2005.

Best paper Best Paper Award at the HCAI Workshop at ACM CIKM 2025 for the paper "Enhancing XAI Narratives through Multi-Narrative Refinement and Knowledge Distillation". Co-authors: Flavio Giorgi, M. Silvestri, Cesare Campagnano, Gabriele Tolomei.

SAC Highlights ACL 2025 SAC Highlights: Senior Area Chair selection of standout papers from the main conference, for the paper "Beyond Position: the emergence of wavelet-like properties in Transformers". Co-authors: Valeria Ruscio, Umberto Nanni.

Notable article ACM Computing Reviews' Notable Books and Articles 2013 for the paper "Discovering Tasks from Search Engine Query Logs" (ACM TOIS). Co-authors: Claudio Lucchese, Salvatore Orlando, Raffaele Perego, Gabriele Tolomei.

Yahoo FREP One of the recipients of the 2011 Yahoo! Faculty Research and Engagement Program (FREP) for the Computational Advertisement, Machine Learning and Search & Web Mining Category

ISTI Young Investigator Award at ISTI-CNR. Most scientifically prolific young scholar in 2010.

Honorable mention Honorable Mention (Best Paper Candidate) at 4th ACM Conference on Web Search and Data Mining (WSDM 2011) with the paper "Identifying Task-based Sessions in Search Engine Query Logs". Co-authors: Claudio Lucchese, Salvatore Orlando, Raffaele Perego, Gabriele Tolomei.

Best paper Best Paper Award at 29th European Conference on Information Retrieval (ECIR 2007) with the paper "Sorting Out the Document Identifier Assignment Problem".

Best paper Best Paper Award at 2004 IEEE/WIC/ACM International Conference on Web Intelligence (WI 2004) with the paper "An Online Recommender System for Large Web Sites". Co-author: Ranieri Baraglia.

Yahoo internal Internal Yahoo recognition: Super Star Award nomination, Labs Excellence Award Program (LEAP) for advertising science work shipped to production code, Patent Milestone Award, and Tech Pulse 2014 Best Paper Award.

PATENTS

Granted (US)

11875273 — Marc Bron, Mounia Lalmas, Huw Evans, Mahlon Chute, Miriam Redi, **Fabrizio Silvestri**. **Machine learning classification of digital content for mobile devices**. Granted 2024.

11526576, 9817911 — Gianmarco De Francisci Morales, Roi Blanco, **Fabrizio Silvestri**. **Method and system for displaying content relating to a subject matter of a displayed media program**. Granted 2017; continuation granted 2022.

11157836 — Gabriele Tolomei, Andy Haines, Mounia Lalmas, **Fabrizio Silvestri**. **Changing machine learning classification of digital content**. Granted 2021.

10755303 — Michele Trevisiol, Gabriele Tolomei, Nicola Barbieri, Mounia Lalmas, Puneet Mohan Sangal, **Fabrizio Silvestri**. **Generating actionable suggestions for improving user engagement with online advertisements**. Granted 2020.

10565527, 9971972 — **Fabrizio Silvestri**, Ricardo Alberto Baeza-Yates, Beverly Harrison, Di Jiang. **Predicting the next application that you are going to use on aviate**. Granted 2018; continuation granted 2020.

9792372 — Xiao Bai, B. Barla Cambazoglu, Francesco Gullo, Amin Mantrach, **Fabrizio Silvestri**. **Using exogenous sources for personalization of website services**. Granted 2017.

Published Applications (not granted)

20160125028 — **Fabrizio Silvestri**, Mihajlo Grbovic, Narayan Bhamidipati, Vladan Radosavljevic, Nemanja Djuric. **Systems and methods for query rewriting**.

20090089244 — Debora Donato, Aristides Gionis, Vanessa Murdock, **Fabrizio Silvestri**. **Method of detecting spam hosts based on clustering the host graph**.

20090089373 — Debora Donato, Aristides Gionis, Vanessa Murdock, **Fabrizio Silvestri**. **System and method for identifying spam hosts using stacked graphical learning**.

20090089285 — Debora Donato, Aristides Gionis, Vanessa Murdock, **Fabrizio Silvestri**. **Method of detecting spam hosts based on propagating prediction labels**.

KEYNOTES, DISTINGUISHED TALKS, AND INVITED SPEECHES

GRAIL 2026 — **From Structured Reasoning to Retrieval-Augmented Generation: A New Take on Relevance**.
Keynote.
GRAIL 2026 – Workshop on Generative AI for Recommendation and Personalization at CIKM 2026. Rome, Italy.

SEBD 2026 — **From Database Reasoning to Retrieval-Augmented Generation: Reimagining Relevance**.
Keynote.
34th Symposium on Advanced Database Systems (SEBD 2026). Senigallia, Italy.

AIxIA 2026 — **Learning with Structured Consistency: Sheaf Neural Networks from Theory to Applications**.
Invited Seminar.
AIxIA Spotlight Seminar Series (online).

IMT 2026 — **Learning with Structured Consistency**.
Invited Talk.
University of Virginia at IMT School for Advanced Studies Lucca. Lucca, Italy.

AGCOM 2026 — **Architetture e Funzionamento dei Sistemi di IA**.
Invited Speech.
AGCOM seminar. Rome, Italy.

PromoPA 2026 **Procurement e uso dell'intelligenza artificiale nella PA**.
Invited Speech.
PromoPA Fondazione webinar (online).

Lincei 2026 **Conferenza generale DIGITALE**.
Invited Lecture.
Fondazione I Lincei per la Scuola (online).

IntelligentIA 2026 **Dall'automazione all'Agentic AI**.
Invited Speech (TED-style talk).
IntelligentIA – A new intelligence for a new era. Rome, Italy.

Eng 2025 **Lo sviluppo del software nell'era della GenAI** (panel).
Invited Speech.
Engineering – Eng Modernize. Milan, Italy.

HCI 2025 **On Retrieval Augmented Generation and some Unexpected Effects**.
Keynote.
Huawei Cloud InnovWave Overseas Workshop 2025. Rome

AI4SS 2025 **On Retrieval Augmented Generation and some Unexpected Effects**.
Keynote.
Artificial Intelligence for a Secure Society – 2nd Edition of the Summer School.

Randstad 2024 **Il futuro dell'AI e gli impatti nelle aziende** (fireside discussion).
Invited Speech.
Il Clipper – Randstad Italia networking event. Rome, Italy.

ECIR 2024 **Vision statement on the future of web search**.
Invited Talk.
Search Futures Workshop at ECIR 2024. Glasgow, United Kingdom.

ICAR 2023 **(Multimodal) Neural Databases**.
Keynote.
Annual Meeting of the ICAR CNR Institute.

FLIRT 2023 **Bridging the Gap: Federated Learning, Large Language Models, and Information Retrieval**
Keynote.
FLIRT 2023 – 1st Workshop on Federated Learning for Information Retrieval at SIGIR 2023. Taipei, Taiwan.

EAI 2021 **Neural Databases: Natural Language Generation Meets Databases**.
Distinguished Lecturer Series.
Institute for Experiential AI at Northeastern University. Boston, MA, USA (virtual).

ICWE 2021 **Neural Databases: Natural Language Generation meets Databases**.
Keynote speech.
ICWE 2021 Conference. Biarritz, France (virtual).

XAI 2021 **Counterfactual Explanations of Machine Learning Models**.
Keynote speech.
XAI 2021 Workshop at AIxIA 2021.

SIRIP 2021 **Industry panel discussion** (moderated by Ricardo Baeza-Yates).
Panel.
SIRIP 2021 – SIGIR Symposium on IR in Practice at SIGIR 2021 (virtual).

IC 2021 **Counterfactual Explanations of (some) Machine Learning Models**.
Distinguished Speech.
Imperial College London, London, United Kingdom.

GT 2020 **How Decoding Strategies Affect the Verifiability of Generated Text**.
Distinguished Speech.
Georgetown University, Washington, D.C., USA.

RMIT 2020 **Robustness in Language Models: From Misspelling Resistant Embedding to Fact Checkable Text Generation**.
Distinguished Speech.
RMIT University, Melbourne, Australia.

SISAP 2019 **Applications of Similarity Search to Socially Relevant Problems**.
Keynote speech.
12th International Conference on Similarity Search and Applications (SISAP 2019). Newark, NJ, USA.

NDR 2019 **Misspelling Oblivious Word Embeddings**.
Invited Speech.
NDR – The Artificial Intelligence Conference. Iași, Romania.

WeCNLP 2018 **Misspelling Oblivious Embeddings**.
Lightning Talk.
West Coast NLP Summit (WeCNLP 2018). Facebook HQ, Menlo Park, CA, USA.

ECIR 2018 **Query Embeddings: From Research to Production and Back!**
Invited Talk.
ECIR 2018 Industry Day. Grenoble, France.

SoMePeAS 2017 **On The Use of Embeddings in Search and Personalization Applications**.
Keynote.
SoMePeAS 2017 – Workshop on Social Media for Personalization and Search at ECIR 2017. Aberdeen, United Kingdom.

Leuven 2015 **On the Use of Word Embeddings in Query Rewriting for Sponsored Search**.
Distinguished Speech.
HCI-LIIR seminar. KU Leuven, Leuven, Belgium.

IIR 2015 **On the Use of Word Embeddings in Query Rewriting for Sponsored Search**.
Keynote.
6th Italian Information Retrieval Workshop – IIR 2015. Cagliari, Italy. 2015

IIS 2013 **Beyond Query Suggestions: Recommending Tasks to Search Engine Users**.
Keynote.
Language Processing and Intelligent Information Systems – 20th International Conference, IIS 2013, Warsaw, Poland. 2013

USI 2009 **Query Recommender Systems**.
Distinguished Speech.
USI Università della Svizzera Italiana, Lugano, Switzerland.

EPFL 2008 **Collection Prioritization and Incremental Caching**.
Distinguished Speech.
EPFL, Lausanne, Switzerland.

BM 2008 **Collection Prioritization and Incremental Caching**.
Distinguished Speech.
Barcelona Media Seminars, Barcelona, Spain.

CZ 2007 **Information Retrieval and Bioinformatics**.
Distinguished Speech.
Informatics and Biomedical Engineering, Department of Experimental and Clinical Medicine, Faculty of Medicine, University “Magna Græcia” of Catanzaro. Catanzaro, Italy.

IIR 2007 **Incremental Caching for Collection Selection Architectures**.
Distinguished Speech.
Information Retrieval/Search Technologies Seminar 2007 - IBM Haifa Labs. Haifa, Israel.

FWS 2007 **Low-fat Search Engines with Collection-Selection Oriented Caching**.
Invited Speech.
The Future of Web Search. Bertinoro, Italy.

FWS 2006 **Boosting Performance of Web Search Engines Using Query Logs**.
Invited Speech.
Yahoo! Research Labs and University Pompeu Fabra - Barcelona, Spain.

Coruña 2006 **The Query-Vector Document Model**.
Invited Speech.
Computer Science Department, University of A Coruna, A Coruna, Spain.

Dijon 2004 **High Performance Issues in Web Search Engines: Algorithms and Techniques**.
Invited Speech.
Laboratoire LE2I (UMR - CNRS) - University of Bourgogne - Dijon, France.

SCIENTIFIC AND INDUSTRIAL RESULTS

Main results at Sapienza

Since joining Sapienza in 2021, Fabrizio Silvestri has founded and leads the RSTLess research group (Robust, Safe, and Transparent Machine Learning) and coordinates the Ph.D. Programme in Data Science. The main results achieved are:

Retrieval-Augmented Generation: showed that retrieval for RAG must be rethought around the LLM reader rather than classical relevance (*The Power of Noise*, SIGIR 2024, among the most cited RAG papers), and followed up with new evaluation protocols and analyses of positional bias and distractors (EACL 2026 oral, EMNLP 2025, ACL 2026).
Sheaf neural networks: introduced sheaf-based models for hypergraphs and recommendation (Sheaf Hypergraph Networks, NeurIPS 2023; Directional Sheaf Hypergraph Networks, ICLR 2026; Sheaf4Rec, ACM TORS).
Interpretability of LLMs: geometric characterization of attention sinks and wavelet-like positional behaviour in Transformers (NeurIPS 2025; ACL 2025, SAC Highlights).
Model merging and efficient adaptation: Task Singular Vectors (CVPR 2025) and MASS (ICLR 2026) for merging fine-tuned models with reduced task interference.
Trustworthy ML: counterfactual explanations for GNNs and recommender systems (AISTATS 2022, SIGIR 2023, KDD 2026), learning with noisy labels (CVPR 2023, IEEE TAI 2026), and misinformation detection (OSNEM 2023, IJCAI 2022 survey).
Funding and leadership: Principal Investigator of the PRIN 2022 project NEREO and of HUMANE within the SERICS extended partnership; participant in the FAIR (PNRR) partnership on AI and in SoBigData; industrial research collaborations with Huawei (task unlearning in LLMs), Spotify, Amazon, and You.com.
Community service: General Chair of ECIR 2025 and Programme Committee Chair of CIKM 2026, both held in Italy.
Supervision: 14 Ph.D. students currently supervised (7 as main supervisor, 7 co-supervised), 2 postdocs, and 12 Ph.D. graduates at Sapienza, now postdocs at Sapienza, researchers at Amazon, or startup founders.

Main results at You.Com

Since 2026, Fabrizio Silvestri consults for You.Com on search engineering, contributing to the design and development of a new search technology for the You.Com platform. Work covers retrieval architecture and the integration of LLM-based generation with the search pipeline.

Main results at Spotify

Between 2022 and 2023, Fabrizio Silvestri consulted for Spotify Technology S.A. on Graph Neural Network technology for search and recommendation. Together with the Spotify search team, he developed a graph learning approach to exploratory query suggestions for Spotify's instant search system, published at CIKM 2023 (*Graph Learning for Exploratory Query Suggestions in an Instant Search System*). The model learns from the graph connecting queries, entities, and user interactions to surface exploratory suggestions beyond simple query completion.

Main results at Facebook AI

At Facebook (now Meta) AI, within the Integrity Research organization. Shipped a graph-based misinformation model to production that outperformed the incumbent baseline; the model uses Graph Neural Networks over the co-interaction structure of posts. Also launched, with my team, a model predicting interactions between adults and minors at higher precision than the system then in production, cutting the number of children exposed to groomers on the platform. Meta does not permit publication of the underlying figures, so they are omitted here.

Main results at Facebook Search

At Facebook (now Meta) Search, set up a team to build query suggestion products and single-handedly launched a new product on the Facebook search result page: "Related Searches". In the later part of this tenure my team produced a word embedding robust to misspellings, deployed in the production query classifier; it raised the classifier's F1 and cut the volume of offensive queries shown to users. Meta does not permit publication of the underlying figures, so they are omitted here.

Main results at Yahoo Labs

Primarily worked on Yahoo Gemini platform. Contributed to:

Launched a dwell time prediction component deployed to the Gemini Native ad serving platform with a solution based on random survival forest uplifting the measured dwell time by 20%.
Launched a solution based on word embedding for query rewriting and query ad matching within Gemini Search resulting in more than 9% uplift in revenue corresponding to tens of millions of dollars in revenue in 2015.
Launched a solution based on information retrieval techniques to compute the relevance of an ad to a query in order to reduce the amount of ads considered not relevant resulting in an increase of 6% in CTR; also, filtered out 80% of editorially annotated bad cases.

Main results at ISTI-CNR

While at ISTI-CNR, Fabrizio Silvestri has worked on Search algorithms and technologies. Query log analysis. Big data analysis science and technologies. Social network analysis. The main results achieved are:

Built one of the first distributed search engines during Ph.D. thesis work. Conducted research on Search and IR algorithms. Results published in major venues in the respective fields.
Participated actively in the design, development, and launch of the Italian search engine Istella (http://istella.it) in collaboration with Tiscali.
Led EU-funded research network on distributed computing. Coordinated unit with members from several European universities and industries. Managed budget of about 250K Euros.

SERVICES

Editorial Boards	Member of the editorial board of the following journals: Online Social Networks and Media, Elsevier. Social Network Analysis and Mining, Springer. Journal of the Franklin Institute, Elsevier. npj Artificial Intelligence, Nature Portfolio. ACM Transactions on Intelligent Systems and Technology (TIST), ACM.
Action Editor	Transactions on Machine Learning Research (TMLR).
General Chair	Chairing the following conferences: ECIR 2025 (Lucca, Italy)
PC Chair	Chairing the Program Committee of the following conferences: ASONAM 2027 PC Co-Chair TheWebConf 2026 Ph.D. Symposium Co-Chair TheWebConf 2026 Search and Retrieval-Augmented AI Track Chair ECML PKDD 2026 - Industry Track Chair CIKM 2026 - Program Committee Chair ESSAI 2025 (European Summer School in Artificial Intelligence) - Program Co-Chair KDD 2024 - Hands On Tutorial Chair ECML PKDD 2023 - Workshop Chair TheWebConf 2022 Systems and Infrastructure Track Chair WISE 2022 ECIR 2021 Industry Day Chair (with Roi Blanco) TheWebConf 2018 Search Track Chair ECIR 2016 Short Paper PC Co-Chair ASONAM 2015 PC Co-Chair CIKM 2013 Associate PC-Chair for IR AIRS 2013 PC Co-Chair SPIRE 2011 (IR Track) AICCS 2011 (IR & DB Track) INFOSCALE 2007
Program Committees	Served in the PC and Senior PC, and Area Chair of several top-tier conferences each year, e.g., NeurIPS, ICML, ACL, AAAI, NAACL, TheWebConf, VLDB, IJCAI, SIGIR, CIKM, ...

SUPERVISED PH.D. STUDENTS AND POSTDOCS

Current	Alessia Borghini Ali Ghasemi Giulia Iadisernia Giulio D'Erasmo Antonio Purificato Florin Cuconasu Filippo Betello
Co-advised	Andrea Giuseppe Di Francesco Salvatore Michele Rago Gavriel Di Nepi Maria Vittoria Vestini Elena Maria Muià Alessio Borgi Simone Petruzzi

Postdocs	Lorenzo Porcaro Federica Baccini
Graduated	Franco Maria Nardini. *Query Log Mining to Enhance User Experience in Search Engines*. Currently Research Director at ISTI-CNR, Pisa, Italy. Gabriele Capannini. *The Impact of Novel Computing Architectures on Large-Scale Distributed Web IR Systems*. Currently Senior Lecturer at Mälardalen University, Sweden. Gabriele Tolomei. *Next-generation Web Search: from Documents To Be Retrieved To Tasks To Be Suggested and Executed*. Currently Associate Professor at Sapienza University of Rome, Italy. Hossein Vahabi. *Managing Collaborative Knowledge: Models, Algorithms, and Applications of Folksonomies to Social Web Platforms*. Currently Professor/Lecturer of Machine Learning at UC Berkeley. Daniele Broccolo. *Distributed Search Architectures*. Currently Senior Software Engineer at DuckDuckGo. Giorgio Barnabò, *Startup Co-Founder* Federico Siciliano, *Researcher at INGV* Maria Sofia Bucarelli, *PostDoc at Inria, Université Côte d'Azur* Valeria Ruscio, *Research Fellow at Intuition Machines* Andrea Bacciu, *Senior Research Scientist at Amazon* Aleksandra Piktus Alessandro Sbandi, *Data Scientist at TIM* Giulia Cassarà Francesco Avella, *Technical Manager at The Information Lab* Francesco Caso, *Postdoc at the University of Cambridge* Farooq Ahmad Wani Jacopo Lenti, *Researcher at Intesa Sanpaolo Research*
Past postdocs	Federico Siciliano Maria Sofia Bucarelli Giovanni Trappolini Cesare Campagnano Giulia Di Teodoro Andrea Drago

TEACHING ACTIVITIES

Current	Generative AI. Graduate course on generative models, LLMs, and agentic AI (in English).
Current	Natural Language Processing and Text Mining – NLP module (in English).
Current	Artificial Intelligence, from the Inside. Ph.D. soft-skills course on AI for doctoral students of every discipline.
A.Y. 2024 –	Computer Science Applications of Machine Learning (Applicazioni Informatiche del Machine Learning, in Italian)
A.Y. 2021 –	Foundations of Artificial Intelligence
A.Y. 2021 –	Deep Learning
A.Y. 2020 – 2023	Theoretical Computer Science
A.Y. 2020	Web Information Retrieval

RESEARCH PROJECTS

Current and recent

2023 – 2025	PRIN 2022. **NEREO**: NEural REasoning over Open data. *Principal Investigator*.

Ongoing	SERICS extended partnership (PNRR). **HUMANE**. *Principal Investigator*.
Ongoing	FAIR extended partnership (PNRR), Future Artificial Intelligence Research. *Participant*.
Ongoing	**SoBigData**, European research infrastructure for big data and social mining. *Participant*.
Ongoing	Industrial research contract with Huawei Technologies Italia. **Task Unlearning in LLMs**. *Fund holder*.

Earlier projects

2002 – 2004	Progetto Strategico Legge 449/97, 1999. ECD: Technologies and Services for Enhanced Contents Delivery.
2002–2003	Progetto finanziato dalla Fondazione Cassa di Risparmio di Pisa. WebDigger: un ambiente di Data Mining per l'analisi intelligente di dati Web.
2002–2005	Progetto FIRB. GridIT: Piattaforme abilitanti per griglie computazionali a elevate prestazioni orientate a organizzazioni virtuali scalabili.
2004–2007	EU FP6 Integrated Project (IP). NextGRID: Next Generation Grid.
2004–2007	EU FP6 Network of Excellence (NoE). CoreGRID: European Research Network on Foundations, Software Infrastructures and Applications for large scale distributed, GRID and Peer-to-Peer Technologies.
2005–2008	Progetto MIUR COFIN2004. GeoPKDD: Geographic Privacy-aware Knowledge Discovery and Delivery.
2005–2006	Progetto Ministero per le Politiche Agricole e Forestali (MiPAF). ESCOGITARE: Un'infrastruttura di E-SCience per gli Istituti di Ricerca del settOre aGro-alImenTARE.
2006–2008	EU FP6 STREP Project. SAPIR: Search on Audio-visual content using Peer-to-peer Information Retrieval.
2009–2012	EU FP7 Network of Excellence (NoE) S-Cube: The Software Services and Systems Network.
2010–2012	EU FP7 Project. ASSETS: Advanced Service Search and Enhancing Technological Solutions for the European Digital Library.
2010–2011	POR CREO FESR, Regione Toscana. VISITO Tuscany: VIsual Support to Interactive TOurism.

Responsibilities in Projects

2009–2012	EU Network of Excellence (NoE) S-Cube: The Software Services and Systems Network. Activity Leader: Integrating Knowledge and Resources (IA-1); Member of the Project Steering Committee.