

Efthymia (Efi) Tsamoura, PhD

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Employment and work achievements

2019 – 2025  **Senior Researcher in Samsung AI Center (SAIC) Cambridge, UK.**

- ☐ I was leading the research on reasoning and neurosymbolic learning within SAIC-Cambridge.
- ☐ I developed provably correct techniques that scaled logical reasoning and query answering to billions of facts [[AAAI 2020](#)], [[VLDB 2021](#)], [[SIGMOD 2023](#)] and led to deep models with substantially higher accuracy over the state-of-the-art [[ICML 2023](#)], [[AAAI 2023](#)].
- ☐ I was the first to prove that we can learn neural classifiers using logical theories as the source of supervision [[NeurIPS 2023](#)], addressing a long-standing problem in weakly supervised and neurosymbolic learning. I was also the first to characterize learning imbalances in neurosymbolic learning [[arXiv 2024](#)].
- ☐ I developed CPU-based techniques capable of scaling rule mining to millions of facts in less than 1% of the run time needed by the state-of-the-art GPU-based approaches [[AAAI 2023](#)], [[arXiv 2024](#)].
- ☐ I was the first to show how to efficiently answer queries in second-order logical theories that include millions of facts, while preserving the correctness and completeness of the answers [[AAAI 2018](#)], [[arXiv 2024](#)].
- ☐ I was recognized as a future leader in AI by the Royal Society, being invited to the Frontiers of Science (FoS) meeting in 2024.
- ☐ I led the organization of two Samsung workshops on neurosymbolic learning in 2021 and 2022 and co-organized five workshops and panels on neurosymbolic learning in KR, AAMAS, KDD, and ISWC between 2021 and 2024.
- ☐ I published 10 papers in top-tier AI, ML, and database venues and journals (NeurIPS, ICML, AAI, VLDB, and SIGMOD) and 4 arXiv preprints.

2016 – 2018  **Research Fellow, Turing Institute, UK.**

- ☐ I was the principal investigator of a project on accessing distributed NHS data under formal privacy guarantees, receiving funding of £100K from the Turing and the FARR institutes.
- ☐ I developed provably correct techniques for accessing remote data under formal privacy guarantees [[KR 2020](#)], [[TODS 2021](#)].
- ☐ I developed the first technique for efficiently answering queries over Web-scale knowledge graphs under complex logical theories [[AAAI 2018](#)] under guarantees on the correctness and completeness of the answers.
- ☐ I published seven papers in top-tier database and AI venues (PODS, EDBT, SIGMOD, KR, TODS, IJCAI, AAI).

Employment and work achievements (continued)

2013 – 2016

■ **Postdoctoral Researcher, University of Oxford, UK.**

- ☐ I theoretically established whether and how to answer queries subject to access restrictions and data constraints under guarantees on the completeness of the answers [PODS 2014], [TODS 2016], [Morgan & Claypool 2016].
- ☐ I led a project on accessing data from the European Bioinformatics Institute (EBI), the National Centre for Biotechnology Information (NCBI), and the Kyoto Encyclopedia of Genes and Genomes (KEGG), being awarded an EPSRC IAA grant.
- ☐ I published five papers in top-tier database and AI venues (VLDB, PODS, TODS, IJCAI) and a book published by Morgan & Claypool.

Older posts

Jan 2012 – May 2013

■ **Project manager & Research assistant**, Data Engineering Laboratory, Department of Computer Science, Aristotle University of Thessaloniki, Greece.

- ☐ I led a nationally funded project on querying data sitting in Cloud infrastructure.

Nov 2008 – May 2013

■ **PhD studies**, Data Engineering Laboratory, Department of Computer Science, Aristotle University of Thessaloniki, Greece.

- ☐ I worked on answering queries in distributed settings under optimality guarantees and multi-objective optimization.

Oct 2007 – Jun 2008

■ **Research assistant**, Multimedia Knowledge Laboratory, Information Technologies Institute, Centre of Research and Technology Hellas (CERTH), Greece.

- ☐ I developed techniques for video understanding that were published in the IEEE International Conference on Image Processing.

Jun 2006 – Sep 2007

■ **Research assistant**, Artificial Intelligence and Information Analysis Lab, Department of Computer Science, Aristotle University of Thessaloniki, Greece.

- ☐ I developed computer vision techniques that were published in the IEEE Transactions on Image Processing journal.

Education and awards

Education










2013

■ **PhD**, Aristotle University of Thessaloniki, Greece.
Thesis title: *Query Optimization in Distributed and Dynamic Environments*.

2007


■ **BSc** in Computer Science, Aristotle University of Thessaloniki, Greece.
Grade: 9.15/10 (*highest grade in the class*).


Awards and distinctions

- 2024  **Recognized as a future leader in AI** by the Royal Society, London, being invited to the Frontiers of Science (FoS) meeting that took place in Ottawa, Canada.
- 2017  **Awarded funding of £100K** by the Turing Institute, UK, and the FARR Institute, UK, to lead a project on privacy preserving access to data from the National Health Service.
- 2016  **Early Career Research Fellowship**, the Alan Turing Institute, UK (*selected among more than 300 applicants*).
- 2010  **Best PhD student in Computer Science**, Aristotle University of Thessaloniki, Greece.
- 2007  **Highest ranked BSc student in Computer Science**, Greek State Scholarships Foundation.
- 2006  **Highest ranked BSc student in Computer Science**, Greek State Scholarships Foundation.
 **Young scientists scholarship**, the Onassis Foundation.
- 2005  **Highest ranked BSc student in Computer Science**, Greek State Scholarships Foundation.
- 2004  **Highest ranked BSc student in Computer Science**, Greek State Scholarships Foundation.

Funding



Obtained research grants

- Jan 2017  **FASHIN: Federated Access to Secure Healthcare INformation.**
Budget: *£100K.*
Role: *Principal Investigator.*
Funding source: *Turing Institute, UK, & FARR Institute, UK.*
Project aims: *Develop techniques for accessing distributed data from the National Health Service (NHS) in an efficient and privacy-preserving fashion.*
Grant applicants: This research grant was authored by me.

- Dec 2015  **Simple Unified Access to Biological Resources on The Web.**
Role: *Research associate.*
Funding source: *EPSRC Impact Acceleration.*
Project aims: *Develop a platform for accessing data from the European Bioinformatics Institute (EBI), the National Centre for Biotechnology Information (NCBI), and the Kyoto Encyclopaedia of Genes and Genomes (KEGG) in a transparent fashion.*
Grant applicants: This research grant was co-authored by me and Professor Michael Benedikt from the University of Oxford.

Mentoring and teaching activities

Mentoring and supervision

- 2025 – now  **Aaditya Naik**, University of Pennsylvania, USA.
Jointly with Professor Mayur Naik.
- 2024 – now  **Jaron Maene**, KU Leuven, Belgium.
Jointly with Professor Luc De Raedt.

Mentoring and supervision (continued)

2023 – 2024	■ Liwei Che , Rutgers University, USA. Jointly with Professor Vladimir Pavlovic.
2022 – now	■ Dominic Phillips , University of Edinburgh, UK.
2022 – 2024	■ Kaifu Wang , University of Pennsylvania, USA. Jointly with Professor Dan Roth.
2021 – 2024	■ Jonathan Feldstein , University of Edinburgh, UK. Jointly with Dr. Vaishak Belle.
2021 – 2022	■ Modestas Jurčius , University of Edinburgh, UK.
2021	■ Davide Buffelli , Samsung AI, Cambridge, UK (intern).
2017 – 2018	■ Benjamin Spencer , Turing Institute, UK (postdoctoral researcher).
2017	■ Ugo Comignani , University Claude Bernard Lyon 1, France. Jointly with Professor Angela Bonifati.

External PhD examiner

















Jan 2024	■ Emile van Krieken , Vrije Universiteit Amsterdam, the Netherlands. Thesis: <i>Optimisation in Neurosymbolic Learning Systems</i> .
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Teaching






Oct 2015 – Dec 2015	■ <i>Databases (undergraduate level)</i> , Department of Computer Science, University of Oxford. Role: <i>Tutor & Lab demonstrator</i> .
Oct 2012 – Jan 2013	■ <i>Databases (undergraduate level)</i> , Department of Computer Science, Aristotle University of Thessaloniki. Role: <i>Teaching assistant</i> .
Feb 2012 – Jun 2012	■ <i>Graph Theory (undergraduate level)</i> , Department of Computer Science, Aristotle University of Thessaloniki. Role: <i>Teaching assistant</i> . ■ <i>Design of Algorithms (undergraduate level)</i> , Department of Computer Science, Aristotle University of Thessaloniki. Role: <i>Teaching assistant</i> .
Oct 2011 – Jan 2012	■ <i>Databases (undergraduate level)</i> , Department of Computer Science, Aristotle University of Thessaloniki. Role: <i>Teaching assistant</i> . ■ <i>Analysis of Algorithms (undergraduate level)</i> , Department of Computer Science, Aristotle University of Thessaloniki. Role: <i>Teaching assistant</i> .
Oct 2010 – Jan 2011	■ <i>Databases (undergraduate level)</i> , Department of Computer Science, Aristotle University of Thessaloniki. Role: <i>Teaching assistant</i> .
Sep 2010 – Jan 2011	■ <i>Analysis of Algorithms (undergraduate level)</i> , Department of Computer Science, Aristotle University of Thessaloniki. Role: <i>Teaching assistant</i> .

Other scientific activities

Invited talks & panels

- Feb 2025  **Training Neural Classifiers Using Logic: Results, Challenges, and Applications**, Department of Computer Science, University of Oxford.
<https://www.cs.ox.ac.uk/seminars/2718.html>.
-  **Training Neural Classifiers Using Logic: Results, Challenges, and Applications**, École Nationale Supérieure De l'Électronique Et De Ses Applications.
- Aug 2024  **(Keynote) Training Neural Classifiers Using Logic**, 1st International Workshop on Logical Foundations of Neuro-Symbolic AI, collocated with the 33rd International Joint Conference on Artificial Intelligence (IJCAI 2024).
<https://sites.google.com/view/lnsai2024/>.
- April 2024  **Materializing Knowledge Bases via Trigger Graphs**, KU Leuven, Leuven, Belgium.
- Mar 2024  **On Training Neural Classifiers Using Logic: Learnability, Error Bounds and Applications**, 1st Workshop on the Foundational Aspects of Neurosymbolic Computing (FANeSy), Santiago, Chile.
<https://sites.google.com/view/fanesy-2024/main>.
- Feb 2024  **(Royal society) Addressing the Limitations of Deep Learning**, UK-Canada Frontiers of Science on Artificial Intelligence, Royal Society of Canada, Ottawa, Canada.
<https://rsc-src.ca/en/events/frontiers-science-2024>.
- Jan 2024  **On Learning Latent Models with Multi-Instance Weak Supervision**, Vrije Universiteit Amsterdam, the Netherlands.
<https://blogs.ed.ac.uk/he-lab/2023/11/16/%e3%80%90bayes-coffee-house-tech-talk-series%e3%80%91on-learning-latent-models-with-multi-instance-weak-supervision/>.
- Nov 2023  **On Learning Latent Models with Multi-Instance Weak Supervision**, University of Edinburgh, UK.
<https://blogs.ed.ac.uk/he-lab/2023/11/16/%e3%80%90bayes-coffee-house-tech-talk-series%e3%80%91on-learning-latent-models-with-multi-instance-weak-supervision/>.
- Oct 2023  **On Learning Latent Models with Multi-Instance Weak Supervision**, University of Cambridge, UK.
<http://talks.cam.ac.uk/talk/index/206044>.
- Jun 2023  **Highly Scalable Reasoning over Knowledge Bases via Trigger Graphs**, 2nd Annual Symposium of the Turing Interest Group on Knowledge Graphs, London, UK.
<https://github.com/turing-knowledge-graphs/meet-ups/blob/main/symposium-2023.md>.
-  **(Keynote) Reasoning at Scale: Why, How and What's Next**, 20th Extended Semantic Web Conference.
<https://2023.eswc-conferences.org/keynote-speakers/>.
- Dec 2022  **Highly Efficient Reasoning via Trigger Graphs**, 6th Stream Reasoning Workshop, Amsterdam, the Netherlands.
<https://streamreasoning.org/events/srw2021/>.
- Nov 2021  **Samsung AI Forum Panel Discussion**.
<https://research.samsung.com/2021saif>.
- Feb 2021  **Neurosymbolic Integration: A Compositional Perspective**, 1st Samsung AI Neurosymbolic Workshop.
<https://research.samsung.com/sanw2021>.
-  **Knowledge Graphs**, Samsung AI boot camp.
- Nov 2017  **Goal-Driven Query Answering for Existential Rules with Equality**, Semmler, Oxford, UK.









Invited talks & panels (continued)

- Oct 2017  **Magic and other Tricks for Goal-Driven Query Answering**, University Claude Bernard Lyon 1, Lyon, France.
- Jun 2016  **Integration, Optimization, and Reasoning over Web Services**, Columbia University, New York, USA.
-  **Integrating Biological Data: Challenges and Solutions**, University of Cambridge, UK.
- Oct 2015  **Integrating Biological Data: New Opportunities and Road Ahead**, European Bioinformatics Institute, Cambridge, UK.
- Apr 2013  **Optimizing Queries in Modern Infrastructure: Challenges, Solutions and Open Problems**, Imperial College London, UK.


Guest lectures and seminars

- Aug 2025  **Neurosymbolic Learning: An Introductory Course to Theory and Applications**, 36th European Summer School in Logic, Language and Information ([to appear](#)).
<https://2025.esslli.eu/courses-workshops-accepted/course-information.html>.
- Nov 2023  **High Performance Reasoning over Knowledge Bases via Trigger Graphs**, Knowledge Graphs, MSc programme, University of Edinburgh.
- Feb 2023  **Probabilistic reasoning at Scale: Trigger Graphs to the Rescue**, Machine Reasoning, MSc programme, University of Pennsylvania.
- Sep 2021  **Logic & Privacy**, Samsung AI, Cambridge, UK.
- Nov 2020  **On Neurosymbolic Integration**, Samsung AI, Cambridge, UK.
- Nov 2019  **Beyond the Grounding Bottleneck: Datalog Techniques for Inference in Probabilistic Logic Programs**, Samsung AI, Cambridge, UK.
- Jan 2019  **Reasoning 2.0**, Samsung AI, Cambridge, UK.


Workshop & panel organization

- Sep 2025  **1st Workshop on New Ideas for Large-Scale Neurosymbolic Learning Systems**, 51st International Conference on Very Large Data Bases ([to appear](#)).
- Aug 2024  **4th Knowledge-Infused Learning Workshop**, 30th ACM SIGKDD Conference on Knowledge Discovery and Data Mining.
<https://kil-workshop.github.io>.
- Nov 2023  **Neurosymbolic AI Panel**, 22nd International Semantic Web Conference.
<https://iswc2023.semanticweb.org/neuro-symbolic-ai-panel/>.
- Aug 2023  **3rd Knowledge-Infused Learning Workshop**, 29th ACM SIGKDD Conference on Knowledge Discovery and Data Mining.
<https://aiisc.ai/kiml2023/>.
- May 2023  **Neurosymbolic AI for Agent and Multi-Agent Systems Workshop**, 22nd International Conference on Autonomous Agents and Multiagent Systems.
<https://albertmeronyo.github.io/nesymas23/>.
- 2023  **Interest Group in Neurosymbolic AI**, Turing Institute, UK.
<https://www.turing.ac.uk/research/interest-groups/neuro-symbolic-ai>.
- Jun 2022  **2nd Samsung AI Neurosymbolic Workshop**.
<https://research.samsung.com/sanw>.
- Nov 2021  **Knowledge Representation for Hybrid & Compositional AI Workshop**, 18th International Conference on Principles of Knowledge Representation and Reasoning.
<https://krhcai.github.io/>.






Workshop & panel organization (continued)

Feb 2021  **1st Samsung AI Neurosymbolic Workshop.**
<https://research.samsung.com/sanw2021>.

Volunteering

2025  **Computing Careers**, St Paul's VA CofE Primary School, Cambridge.
Together with teachers at the St Paul's VA CofE Primary School, we will organize a series of events to introduce primary school students to computing and engineering.

Software

- 2015  PDQ [VLDB 2015] [GitHub]: Java engine to support querying remote distributed data sources under different access patterns (e.g., web services) and database constraints (e.g., inclusion dependencies). The engine has been demonstrated in multiple scenarios, including [querying biological data available via web services](#). The foundations of PDQ have been presented in PODS 2014 and TODS 2016. [THEMES: [DISTRIBUTED DATABASES](#)]
- 2017  CHASEBENCH [PODS 2017] [GitHub]: Tools and datasets for benchmarking different techniques for querying and materializing knowledge graphs. [THEMES: [KNOWLEDGE GRAPHS](#), [REASONING](#)]
- 2018  CHASEGOAL [AAAI 2018] [Webpage]: Technique to support sound and complete query answering over knowledge graphs under Datalog rules with existential quantification and equalities. CHASEGOAL outperforms by several orders of magnitude in terms of runtime and memory query answering under the commercial engine RDBFox, making the difference between answering a query in a few seconds or not being able to process the query at all. [THEMES: [KNOWLEDGE GRAPHS](#), [REASONING](#), [QUESTION ANSWERING](#)]
- 2020  vPROBLOG [AAAI 2020] [BitBucket]: First efficient C++ engine to support sound and complete query answering over probabilistic knowledge graphs using Datalog rules under the [distribution semantics](#). vPROBLOG was the first engine to outperform the state-of-the-art engine ProbLog2 by several orders of magnitude in terms of runtime, making the difference between answering a query in a few seconds or not being able to process the query at all. vPROBLOG relies on the notion of [provenance semirings](#) to enable probabilistic reasoning and database optimization techniques to speed up reasoning. [THEMES: [KNOWLEDGE GRAPHS](#), [PROBABILISTIC REASONING](#), [QUESTION ANSWERING](#)]
- 2021  NEUROLOG [AAAI 2021] [BitBucket]: Prototype for neurosymbolic integration implemented in PyTorch. NEUROLOG outperformed in terms of accuracy and runtime all the state-of-the-art neurosymbolic engines by that time, namely DeepProbLog, ABL, and NeurASP, supporting training on datasets that those techniques do not scale. NEUROLOG laid the foundations for formalizing the problems of [training neural classifiers using supervision from logical theories](#) and [imbalanced neurosymbolic learning](#). [THEMES: [NEUROSYMBOLIC LEARNING](#) [MACHINE LEARNING](#)]

Software (continued)




■ GLog [VLDB 2021] [GitHub]: C++ engine to support sound and reason over knowledge graphs using Datalog rules with existentials. GLog outperforms commercial and open-source engines, such as VLog, RDFox, Vadalog, WebPIE, and Inferray, by several orders of magnitude in terms of runtime, while incurring the same or less main memory overhead. Regarding RDFox, GLog substantially outperform it in terms of time and memory efficiency despite the fact that GLog reason using a *single thread only*: in on-device reasoning, GLog is more than *18x faster* (1s vs 18.7s) than RDFox when RDFox uses 1 thread, and up to *6x faster* (1s vs 6s) when RDFox uses 16 threads. Furthermore, the memory requirements of GLog are usually lower than that of RDFox. In terms of scalability, GLog allows the materialization of knowledge graphs with 17B facts in less than 40 min using a single machine with commodity hardware. Other knowledge graphs in which GLog outperforms the state-of-the-art are ChaseBench, LUBM, UOBM, DBpedia, Claros, Reactome, and Yago. GLog can be deployed on mobile phones under the Android NDK for reasoning running exclusively on the device. [THEMES: KNOWLEDGE GRAPHS, REASONING, ONDEVICE]

2022-2023

■ LTGs [SIGMOD 2023] [GitHub]: C++ engine to support sound and complete query answering over probabilistic knowledge graphs using Datalog rules under the [distribution semantics](#). LTGs is an extension of GLog. LTGs substantially outperforms engines, such as ProbLog2, vProbLog, and Scallop, both in terms of runtime and memory overhead, even without approximations. The technology behind LTGs extends the notion of [provenance circuits](#). LTGs can be deployed on mobile phones under the Android NDK for reasoning running exclusively on-device. LTGs offers a [Python API Here](#) are further instructions and scripts to reproduce the experiments in the [SIGMOD paper](#). LTGs can be applied to on-device visual question answering and outperforms LXMERT and RVC on the [VQAR benchmark](#). In addition, its [Python API](#) offers easy integration with foundational models. [THEMES: KNOWLEDGE GRAPHS, PROBABILISTIC REASONING, COMPUTER VISION, VISUAL QUESTION ANSWERING, MACHINE LEARNING, ONDEVICE]

■ NGP [AAAI 2023] [Access upon request]: NGP is a technique implemented in PyTorch for regularizing deep models for scene graph generation (SGG) at training-time, by injecting commonsense knowledge. NGP achieves the following: (i) it improves the accuracy of IMP, MOTIFS, and VCTree baseline SGG models, by up to 33%, leading to 16% absolute accuracy improvements when applied in conjunction with TDE; (ii) it outperforms GLAT and LENSr, two state-of-the-art training-time regularization techniques, by up to 18% and 15%; (iii) it can improve the accuracy of a baseline SGG model by up to six times when restricting the availability of ground-truth training facts; (iv) it outperforms in accuracy BGNN by up to 90% and KBFN by up to 86% when combined with TDE. NGP has been evaluated on the Visual Genome and the Open Images v6 datasets. This library builds upon Mask R-CNN for bounding box detection. [THEMES: COMPUTER VISION, SCENE GRAPH GENERATION, MACHINE LEARNING, NEUROSymbolic LEARNING]

Software (continued)

- 2023  **CONCORDIA** [ICML 2023] [GitHub]: Teacher-Student neurosymbolic framework, where instead of being a complex deep model, the teacher is a probabilistic logical theory. The framework has been implemented in PyTorch. CONCORDIA supports supervised, semisupervised and unsupervised training and has been applied to a variety of tasks, exceeding the relevant state-of-the-art. In particular, CONCORDIA outperforms [DPL](#), [Bi-LSTM](#), and [Distil-BERT](#) on entity linking and [IARG](#) and [PSL-CAD](#) on collective activity detection when using [MobileNet](#) and [Inception-v3](#) as backbone networks. CONCORDIA is strictly more expressive than [DPL](#) and [T-S](#) in terms of the types of supported logical theories. [THEMES: [COMPUTER VISION](#), [NEUROSymbOLIC LEARNING](#), [VIDEO ACTIVITY DETECTION](#), [MACHINE LEARNING](#), [LANGUAGE MODELS](#)]
-  **PRISM** [AAAI 2023] [GitHub]: Mining rules from relational data is a key problem in AI. The basis of rule mining is the mining of repeated data patterns, known as *structural motifs*. Despite the importance of extracting “good” structural motifs, the problem was not well understood. PRISM is the first principled technique for mining structural motifs for learning languages that blend first-order logic with probabilistic models. PRISM is implemented in C++ and can improve over state-of-the-art rule mining techniques, namely [LSM](#) and [BOOSTR](#), by up to 6% in terms of accuracy and up to 80% in terms of runtime. PRISM has been the basis for developing [SPECTRUM](#), an even more efficient C++ rule mining technique that scales to datasets having million facts. Furthermore, SPECTRUM outperforms on the most well-known benchmarks (such as [WN18RR](#) and [FB15K-237](#)) state-of-the-art rule mining techniques for entity linking, such as [AMIE3](#), [RNNLogic](#), and [NCRL](#), by up to x100 in terms of runtime, while running exclusively on CPU. [THEMES: [RULE MINING](#), [KNOWLEDGE GRAPHS](#), [MACHINE LEARNING](#), [LINK PREDICTION](#)]
- 2024  **SO-QA** [arXiv 2024] [Webpage]: Supporting sound and complete query answering over knowledge graphs under very complex classes of rules has been a long-standing problem in AI. This is the first technique to support query answering under second-order rules with equality in the order of milliseconds. The technique has been implemented on top of the [RDFox's](#) Java API and has been developed in collaboration with Oxford Semantics Technologies. [THEMES: [KNOWLEDGE GRAPHS](#), [REASONING](#), [QUESTION ANSWERING](#)]

Research publications

Symbols ($\alpha\beta$) and (*) are used to denote alphabetical ordering of the authors and joint first authorship, respectively.

Books

- ☐ ($\alpha\beta$) Michael Benedikt, Julien Leblay, Balder ten Cate, and **Efthymia Tsamoura**. “*Generating Plans from Proofs: the Interpolation-Based Approach to Query Reformulation*”. Synthesis Lectures on Data Management. Morgan & Claypool Publishers, 2016. isbn: 978-3-031-00728-6. [Link]

arXiv Preprints

- ☐ **Efthymia Tsamoura** and Boris Motik. “*Goal-Driven Query Answering over First- and Second-Order Dependencies with Equality*”. arXiv:2412.09125. 2024. [arXiv]
- ☐ Jonathan Feldstein, Paulius Dilkas, Vaishak Belle, and **Efthymia Tsamoura**. “*Mapping the Neuro-Symbolic AI Landscape by Architectures: A Handbook on Augmenting Deep Learning Through Symbolic Reasoning*”. arXiv:2410.22077. 2024. [arXiv]

- Kaifu Wang*, **Efthymia Tsamoura***, and Dan Roth. “On Characterizing and Mitigating Imbalances in Multi-Instance Partial Label Learning”. arXiv:2407.10000. 2024. [[arXiv](#)]
- Jonathan Feldstein, Dominic Phillips, and **Efthymia Tsamoura**. “Efficiently Learning Probabilistic Logical Models by Cheaply Ranking Mined Rules”. arXiv:2409.16238. 2024. [[arXiv](#)]

Conference Proceedings

- Kaifu Wang, **Efthymia Tsamoura**, and Dan Roth. “On Learning Latent Models with Multi-Instance Weak Supervision”. In: Proceedings of the 37th Conference on Neural Information Processing Systems (NeurIPS), 2023. [[pdf](#)] [[arXiv](#)]
- Jonathan Feldstein, Modestas Jurcius, and **Efthymia Tsamoura**. “Parallel Neurosymbolic Integration with Concordia”. In: Proceedings of the International Conference on Machine Learning (ICML), Honolulu, Hawaii, USA, 23-29 July. pp. 9870–9885. 2023. [[pdf](#)] [[arXiv](#)]
- **Efthymia Tsamoura**, Jaehun Lee, and Jacopo Urbani. “Probabilistic Reasoning at Scale: Trigger Graphs to the Rescue”. In: Proceedings of the ACM SIGMOD 2023 International Conference on Management of Data (SIGMOD), Seattle, WA, USA, 12-23 July. 2023. [[pdf](#)] [[arXiv](#)]
- Jonathan Feldstein, Dominic Phillips, and **Efthymia Tsamoura**. “Principled and Efficient Motif Finding for Structure Learning of Lifted Graphical Models”. In: Proceedings of the 37th AAAI Conference on Artificial Intelligence (AAAI), Washington, DC, USA, February 7-14, pp. 12205–12215. 2023. [[pdf](#)] [[arXiv](#)]
- Davide Buffelli* and **Efthymia Tsamoura***. “Scalable Theory-Driven Regularization of Scene Graph Generation Models”. In: Proceedings of the 37th AAAI Conference on Artificial Intelligence (AAAI), Washington, DC, USA, February 7-14. pp. 6850–6859, 2023. [[arXiv](#)]
- **Efthymia Tsamoura**, Timothy M. Hospedales, and Loizos Michael. “Neural-Symbolic Integration: a Compositional Perspective”. In: Proceedings of the 35th AAAI Conference on Artificial Intelligence (AAAI), February 2-9. pp. 5051–5060. 2021. [[pdf](#)] [[arXiv](#)]
- ($\alpha\beta$) Angela Bonifati, Ugo Comignani, and **Efthymia Tsamoura**. “Exchanging Data under Policy Views”. In: Proceedings of the 24th International Conference on Extending Database Technology (EDBT), Nicosia, Cyprus, March 23 – 26. pp. 1–12. 2021. [[pdf](#)]
- ($\alpha\beta$) Michael Benedikt, Pierre Bourhis, Louis Jachiet, and **Efthymia Tsamoura**. “Balancing Expressiveness and Inexpressiveness in View Design”. In: Proceedings of the 17th International Conference on Principles of Knowledge Representation and Reasoning (KR), Rhodes, Greece, September 12-18. pp. 109–118. 2020. [[pdf](#)] [[arXiv](#)]
- **Efthymia Tsamoura**, Víctor Gutiérrez-Basulto, and Angelika Kimmig. “Beyond the Grounding Bottleneck: Datalog Techniques for Inference in Probabilistic Logic Programs”. In: Proceedings of the 34th AAAI Conference on Artificial Intelligence (AAAI), New York, NY, USA, February 7-12. pp. 10284–10291. 2020. [[pdf](#)]
- ($\alpha\beta$) Angela Bonifati, Ugo Comignani, and **Efthymia Tsamoura**. “MapRepair: Mapping and Repairing under Policy Views”. In: Proceedings of the 2019 ACM SIGMOD International Conference on Management of Data (SIGMOD), Amsterdam, The Netherlands, June 30 - July 5, pp. 1873–1876. 2019. [[pdf](#)]
- ($\alpha\beta$) Michael Benedikt, Boris Motik, and **Efthymia Tsamoura**. “Goal-Driven Query Answering for Existential Rules With Equality”. In: Proceedings of the 32nd AAAI Conference on Artificial Intelligence (AAAI), New Orleans, Louisiana, USA, February 2-7, pp. 1761–1770. 2018. [[pdf](#)] [[arXiv](#)]
- ($\alpha\beta$) Michael Benedikt, George Konstantinidis, Giansalvatore Mecca, Boris Motik, Paolo Papotti, Donatello Santoro, and **Efthymia Tsamoura**. “Benchmarking the Chase”. In: Proceedings of the 36th ACM SIGMOD-SIGACT-SIGAI Symposium on Principles of Database Systems (PODS), Chicago, IL, USA, May 14-19. pp. 37–52. 2017 [[pdf](#)]

- ($\alpha\beta$) Michael Benedikt, Egor V. Kostylev, Fabio Mogavero, and **Efthymia Tsamoura**. “*Reformulating Queries: Theory and Practice*”. In: Proceedings of the 26th International Joint Conference on Artificial Intelligence (IJCAI), Melbourne, Australia, August 19-25. pp. 837–843. 2017. [\[pdf\]](#)
- ($\alpha\beta$) Michael Benedikt, Rodrigo Lopez-Serrano, and **Efthymia Tsamoura**. “*Biological Web Services: Integration, Optimization, and Reasoning*”. In: Proceedings of the Workshop on Advances in Bioinformatics and Artificial Intelligence: Bridging the Gap co-located with the 25th International Joint Conference on Artificial Intelligence (IJCAI), New-York, USA, July 11. pp. 21–27. 2016. [\[pdf\]](#)
- ($\alpha\beta$) Michael Benedikt, Balder ten Cate, and **Efthymia Tsamoura**. “*Generating Low-Cost Plans from Proofs*”. In: Proceedings of the 33rd ACM SIGMOD-SIGACT-SIGART Symposium on Principles of Database Systems (PODS), Snowbird, UT, USA, June 22-27. pp. 200–211. 2014. [\[pdf\]](#)
- **Efthymia Tsamoura**, Anastasios Gounaris, and Kostas Tsichlas. “*Multi-Objective Optimization of Data Flows in a Multi-Cloud Environment*”. In: Proceedings of the 2nd Workshop on Data Analytics in the Cloud, co-located with the 2013 ACM SIGMOD International Conference on Management of Data (SIGMOD), New York, NY, USA, June, pp. 6–10. 2013. [\[pdf\]](#)
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