Joaquin Vanschoren, Ph.D.

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Profile

I aim to build AI systems that learn how to learn, progressively moving from hand-designed learning algorithms to learned algorithms that optimally build on prior experience and efficiently adapt to new tasks. I founded OpenML, an open-source platform for sharing and structuring machine learning datasets, models, and experiments, and I work on combining AutoML, meta-learning, and continual learning to optimally learn from prior experience. I am always eager to meet new people and hope to change the world for the better.

Professional Experience

1/2014 - present **Assistant Professor, TU Eindhoven**, Netherlands.
- Founded the *OpenML* open-source project, with currently 11 core developers, 250k users, and integrations in key ML frameworks (e.g. scikit-learn, TensorFlow).
- Built and coached a thriving AutoML research team (10 PhDs, postdocs, RSEs).
- Co-authored a book on AutoML, with 740k downloads, 600+ citations, 4.5/5 stars.
- Presented tutorials at major conferences (e.g. NeurIPS, AAAI), and 30+ invited talks.
- Developed a master course *Machine Learning Engineering*, with 88% approval rate.
- Attracted over €4.5 million in grants (EU, DARPA, NWO, Research Awards,...).
- Chaired a new track on Datasets and Benchmarks at the NeurIPS conference.

1/2013 - 12/2013 **Data Scientist, CityLife** (now: Joyn), Belgium.
- Developed and optimized a recommender system for 150k users.

9/2010 - 8/2013 **Post-doctoral Fellow and Lecturer, Leiden University**, Netherlands.
- Developed the first version of OpenML.
- Developed scalable ML algorithms (MapReduce, HPC,...) in real-world applications.

5/2010 - 9/2010 **Post-doctoral Fellow, KU Leuven**, Belgium.

8/2005 - 5/2010 **Ph.D. researcher, KU Leuven**, Belgium, and **Waikato University**, New Zealand.
- Won an ECML best demo award. Published original research in meta-learning.

Education

2005 – 2010 **Ph.D. Computer Science, KU Leuven**.
Thesis title: *Understanding Machine Learning Performance with Experiment Databases.*
Advisors: Hendrik Blockeel and Geoffrey Holmes (Univ. Waikato, New Zealand)

2000 – 2005 **M.Sc. Computer Science, KU Leuven**, *cum laude*.
Thesis title: *A framework for high-level perception*, magna cum laude.
Advised by Prof. Douglas R. Hofstadter, Indiana University in Bloomington.

Awards and Fellowships

2019-present **ELLIS, Founding member**. European Laboratory for Learning and Intelligent Systems

2019 **Amazon Research Award**, Amazon Research

2018-present **CLAIRE, Key member**. Confederation of Laboratories for AI Research in Europe

2016,2017 **Microsoft Azure Research Award**, Microsoft Research

2016 **Dutch Data Prize** (for OpenML), Research Data Netherlands

2009 **Best Demo Award**, 17th European Conference on Machine Learning (ECML-PKDD)

Skills

Leadership	Coaching a team of 10 researchers (PhDs, postdocs, RSEs). Open source project lead (OpenML). Conference chair (NeurIPS, Discovery Science, LION).
Academic	Published 100+ papers in journals, conferences, and workshops. Taught tutorials and summer schools at major venues (NeurIPS, AAAI, ACDL,...). Gave 30+ invited talks. Edited and reviewed for major journals and conferences (JMLR, NeurIPS, ICML,...).
Coding	Proficient in Python, Javascript. Experience with R, Java. Open-source development.
Technologies	ML Libraries (TensorFlow, scikit-learn, PyTorch,…), Databases (SQL/NoSQL), Web frameworks (React, Flask, Dash,…), API development, Server admin (Linux).

Media

5/5/2021	BioTech podcast, interview on OpenML
5/2020	KDnuggets, article on our new AutoML book
13/4/2019	Science Magazine, interview on AutoML-Zero
15/2/2018	Science Magazine, interview on the replicability of AI studies
10/2016	Open Science Radio podcast, interview on OpenML
8/2014	KDnuggets, article on OpenML

Teaching Experience

University courses

2019-present	**Machine Learning Engineering (M.Sc)**, TU Eindhoven. Evaluation: 8.8/10
2018-present	**Data Mining (M.Sc)**, Jheronimus Academy of Data Science. Evaluation: 8.1/10
2016-2017	**Data Mining (B.Sc)**, Jheronimus Academy of Data Science. Evaluation: 8.4/10
2015-2017	**Foundations of Data Mining (M.Sc)**, TU Eindhoven. Evaluation: 7.8/10
2014-2015	**Web-scale Information Systems (M.Sc)**, TU Eindhoven. Evaluation: 7.7/10
2014-2017	**Web Technology (B.Sc)**, TU Eindhoven. Evaluation: 7.2/10
2011-2014	**Data Mining (B.Sc)**, Leiden University. Evaluation: 7.6/10

Tutorials

2021	**AAAI 2021** Tutorial on Metalearning. AAAI Conference on Artificial Intelligence.
	ACDL 2021 Tutorial on Metalearning. Advanced Course on Data science and Machine Learning, Pontigniano, Italy.
	DSAA 2021 Tutorial on Metalearning. Data Science and Advanced Analytics Conference.
	ODSC Europe 2021 Tutorial on AutoML. Open Data Science Conference.
2019	**ACDL 2019** Tutorial on AutoML. Advanced Course on Data science and Machine Learning, Pontigniano, Italy.
	ODSC Europe 2019 Tutorial on AutoML. Open Data Science Conference.
2018	**NeurIPS 2018** Tutorial on Automated Machine Learning, with Frank Hutter. Neural Information Processing Systems.
2017	**Geilo Winter School 2017** Tutorial on Machine Learning, Geilo, Norway.
	ECMLPKDD 2017 Tutorial on Automated Machine Learning.
2015	**ECMLPKDD 2015** Tutorial on Metalearning and Algorithm Selection.

Teaching Experience (continued)

PhD Students Advised

- 2021-... Fangqin Zhou (TU Eindhoven). Meta-reinforcement learning for control.
- Andrei Simion-Constantinescu (TU Eindhoven). Self-supervised learning for vision.
- Israel Campero Jurado (TU Eindhoven). AutoML and metalearning for time series.
- Elif Ceren Gok (TU Eindhoven). AutoML for evolving data.
- Murat Onur Yildirim (TU Eindhoven). AutoML for unsupervised tasks.
- 2018-... Bilge Celik (TU Eindhoven). AutoML for evolving data.
- 2017-2021 Pieter Gijsbers (TU Eindhoven). Systems for AutoML research.
- 2015-2019 Chao Zhang (TU Eindhoven). Data analysis for digital health.
- 2014-2018 Rafael Mantovani (Univ. Sao Paolo). Metalearning for hyperparameter tuning.
- 2012-2016 Jan van Rijn (Leiden University). Massively collaborative machine learning.

Other Students Advised

- 2019-... Marcos L.P. Buenos, PostDoctoral Fellow (TU Eindhoven).
- Prabhant Singh, RSE, OpenML core development (TU Eindhoven).
- 2018-2021 Sahitya Ravi, RSE, OpenML core development (TU Eindhoven).
- 2018-2020 Yandre Lozano, PDEng, Predictive Maintenance for Smart Buildings (TU Eindhoven).
- Karthik Srinivasan, PDEng, Preventing Burglaries and Other Incidents (TU Eindhoven).

Grants

- 2021-… Dutch Science Foundation, Merian Fund, *Digital Twin of a Vertical Farm*, €278,000
- 2020-… EU Horizon 2020, *Stairway to AI*, €218,000
- ITEA Inno4Health, *Continuous monitoring in personal and physical health*, €517,000
- Dutch Science Foundation, TTW, *Multi Modal Photochemistry*, €122,000
- EU Horizon 2020, *TAILOR Network of AI Excellence*, €1,850,000
- Dutch Science Foundation, *SkyHigh: Leveraging AI in Vertical Farming*, €300,000
- 2019-2021 BOOST, *Educational platform for machine learning and medical image analysis*, €60,000
- 2019-2020 Amazon Research Award, *The AutoML Gym*, $100,000
- 2017-… Dutch Science Foundation, Commit2Data, *Dynamic Data Analytics through Automatically Constructed Machine Learning Pipelines*, €240,000
- 2017-2021 DARPA, *Data Driven Discovery of Models*, €500,000
- 2016-2016 Microsoft Azure Research Award, *A Cloud-Based Platform for AutoML*, €40,000
- 2012-2016 Dutch Science Foundation, Free Competition, *Massively Collaborative ML*, €240,000
- 2012-2013 EU PASCAL Harvest, *MLOpen Machine Learning Platform*, €30,000

Professional Activities

Journal Action Editor

- Journal of Machine Learning Research (JMLR)
- Machine Learning Journal (MLJ)

Professional Activities (continued)

Conference Chair

- **Datasets & Benchmarks Chair**. Conference on Neural Information Processing Systems (NeurIPS 2021)
- **Program Chair**. International Conference Discovery Science (DS 2018)
- **General Chair**. Learning and Intelligent OptimizatioN Conference (LION 2016)
- **Demo Chair**. European Conference on Machine Learning (ECMLPKDD 2013)
- **Program Chair**. Belgian-Dutch Machine Learning Conference (BeNeLearn 2010-2011)

Workshop Chair

- NeurIPS Workshop on Meta-Learning, 2018 – 2021
- NeurIPS Workshop on Data-Centric AI, 2021
- AAAI Workshop on Meta-Learning, 2021
- ICML Workshop on Automatic Machine Learning, 2016 – 2021
- DALI Workshop on The Data Science Process, 2017
- ECMLPKDD Workshop on Automatic Machine Learning, 2017
- ECMLPKDD Workshop on Meta-Learning and Algorithm Selection, 2015
- ECAI Workshop on Meta-Learning and Algorithm Selection, 2014
- ECMLPKDD Workshop on Learning from Unexpected Results, 2012
- ECAI Workshop on Planning to Learn, 2012

Reviewer

- Journal of Machine Learning Research
- Machine Learning Journal
- IEEE Transactions on Pattern Analysis and Machine Intelligence
- International Conference on Machine Learning (ICML) 2012 – 2021 (Area chair)
- Neural Information Processing Systems (NeurIPS) 2016 – 2020 (Top 10% reviewer)
- Machine Learning and Systems (MLSys) 2019 – 2020
- European Conference on Machine Learning (ECML-PKDD) 2012 – 2017
- European Conference on Artificial Intelligence (ECAI) 2014 – 2016
- ACM SIGKDD Conference on Knowledge Discovery and Data Mining (KDD) 2016

Invited Talks

- OECD Workshop on AI and the productivity of science, Virtual, Nov 2021
- Keynote, International Conference on Intelligent Data Engineering and Automated Learning (IDEAL), Virtual, Nov 2021
- Scalable Data Science Keynote, International Conference on Very Large Data Bases (VLDB), Aug 2021
- Data-Centric AI event with Andrew Ng, Virtual, Aug 2021
- Florence Nightingale Symposium, Virtual, Jan 2021
- Freiburg Machine Learning Lab, Virtual, Dec 2020
- International FAIR Convergence Symposium, Virtual, Nov 2020
- ELLIS AutoML Seminar, Virtual, Sep 2020

Invited Talks (continued)

- UCI Symposium on Reproducibility in Machine Learning, Virtual, Sep 2020
- Booking.com Research, Amsterdam, The Netherlands, Jan 2020
- ECML Workshop on Automated Machine Learning, Wurzburg, Germany, Sep 2019
- UN Global Summit on AI for Good, Geneva, Switzerland, May 2019
- Spring Symposium (AI for collaborative data science), AAAI, Stanford, USA, Mar 2019
- MLOSS Workshop, NeurIPS, Montreal, Canada, Dec 2018
- AutoML Workshop, PRICAI, Nanjing, China, Aug 2018
- DEEM Workshop, SIGMOD, Houston, USA, Jun 2018
- National eScience Symposium, Amsterdam, The Netherlands, Oct 2017
- Reproducible Machine Learning workshop, ICML, Sydney, Australia, Aug 2017
- Big data tools for physics and astronomy workshop, Amsterdam, The Netherlands, Jun 2017
- Amazon Research, Berlin, Germany, Apr 2017 and Cambridge, UK, Feb 2017
- Challenges in Machine Learning Workshop, NIPS, Barcelona, Spain, Dec 2016
- Dutch Society for Pattern Recognition, Eindhoven, The Netherlands, Nov 2016
- IBM Watson Research Center, New York, USA, Jun 2016
- Machine Learning for High Energy Physics, Lund, Sweden, Jun 2016
- Open Data Science @ Sheffield workshop, Sheffield, UK, Dec 2015
- Horizon Talk, IDA, St Etienne, France, Oct 2015
- Keynote, Statistical Computing (StatComp), Ulm, Germany, Jul 2015
- AutoML Workshop, ICML, Lille, France, Jul 2015
- Keynote, European Conference on Data Analysis (ECDA), Bremen, Germany, Jul 2014

Research Publications

Journal Articles

1. Balázs, C., van Beekveld, M., Caron, S., Dillon, B. M., Farmer, B., Fowlie, A., Garrido-Merchán, E. C., Handley, W., Hendriks, L., Jóhannesson, G., Mamužić, J., Martinez, G., Scott, P., Ruiz de Austri, R., Searle, Z., Stienen, B., **Vanschoren, J.**, & White, M. (2021). A comparison of optimisation algorithms for high-dimensional particle and astrophysics applications. *Journal of High Energy Physics, 2021*(5), 1–46.
2. Celik, B., & **Vanschoren, J.** (2021). Adaptation strategies for automated machine learning on evolving data. *IEEE Transactions on Pattern Analysis and Machine Intelligence (TPAMI), 43*(9), 3067–3078.
3. Feurer, M., van Rijn, J. N., Kadra, A., Gijsbers, P., Mallik, N., Ravi, S., Müller, A., **Vanschoren, J.**, & Hutter, F. (2021). OpenML-Python: An extensible Python API for OpenML. *Journal of Machine Learning Research (JMLR), 22*(100), 1–5.
4. Olier, I., Orhobor, O. I., Dash, T., Davis, A., **Vanschoren, J.**, & King, R. D. (2021). Transformational machine learning: Learning how to learn from many related scientific problems. *Proceedings of the National Academy of Sciences (PNAS), In press*.
5. Rivolli, A., Garcia, L. P., Soares, C., **Vanschoren, J.**, & de Carvalho, A. C. (2021). Meta-features for meta-learning. *Knowledge-Based Systems, In press*.
6. Casalicchio, G., Bossek, J., Lang, M., Kirchhoff, D., Kerschke, P., Hofner, B., Seibold, H., **Vanschoren, J.**, & Bischl, B. (2019). OpenML: An R package to connect to the machine learning platform OpenML. *Computational Statistics, 34*(3), 977–991.

7. Gijsbers, P., & **Vanschoren, J.** (2019). GAMA: a Genetic Automated Machine learning Assistant. *Journal of Open Source Software (JOSS), 4*(33), 1132.
8. Mantovani, R. G., Rossi, A. L., Alcobaca, E., **Vanschoren, J.**, & de Carvalho, A. C. (2019). A meta-learning recommender system for hyperparameter tuning: Predicting when tuning improves SVM classifiers. *Information Sciences, 501*, 193–221.
9. Sadawi, N., Olier, I., **Vanschoren, J.**, Van Rijn, J. N., Besnard, J., Bickerton, R., Grosan, C., Soldatova, L., & King, R. D. (2019). Multi-task learning with a natural metric for Quantitative Structure Activity Relationship learning. *Journal of Cheminformatics, 11*(1), 1–13.
10. Abdulrahman, S. M., Brazdil, P., van Rijn, J. N., & **Vanschoren, J.** (2018). Speeding up algorithm selection using average ranking and active testing by introducing runtime. *Machine learning, 107*(1), 79–108.
11. Olier, I., Sadawi, N., Bickerton, G. R., **Vanschoren, J.**, Grosan, C., Soldatova, L., & King, R. D. (2018). Meta-QSAR: A large-scale application of meta-learning to drug design and discovery. *Machine Learning, 107*(1), 285–311.
12. van Rijn, J. N., Holmes, G., Pfahringer, B., & **Vanschoren, J.** (2018). The online performance estimation framework: Heterogeneous ensemble learning for data streams. *Machine Learning, 107*(1), 149–176.
13. Lawrynowicz, A., Esteves, D., Panov, P., Soru, T., Dzeroski, S., & **Vanschoren, J.** (2017). An algorithm, implementation and execution ontology design pattern. *Advances in Ontology Design and Patterns, 32*, 55.
14. Bischl, B., Kerschke, P., Kotthoff, L., Lindauer, M., Malitsky, Y., Fréchette, A., Hoos, H., Hutter, F., Leyton-Brown, K., Tierney, K., & **Vanschoren, J.** (2016). ASlib: A benchmark library for algorithm selection. *Artificial Intelligence, 237*, 41–58.
15. Eerikäinen, L. M., **Vanschoren, J.**, Rooijakkers, M. J., Vullings, R., & Aarts, R. M. (2016). Reduction of false arrhythmia alarms using signal selection and machine learning. *Physiological measurement, 37*(8), 1204–1216.
16. Gao, B., Berendt, B., & **Vanschoren, J.** (2016). Toward understanding online sentiment expression: An interdisciplinary approach with subgroup comparison and visualization. *Social Network Analysis and Mining, 6*(1), 1–16.
17. **Vanschoren, J.**, Van Rijn, J. N., Bischl, B., & Torgo, L. (2014). OpenML: Networked science in machine learning. *ACM SIGKDD Explorations Newsletter, 15*(2), 49–60.
18. Serban, F., **Vanschoren, J.**, Kietz, J.-U., & Bernstein, A. (2013). A survey of intelligent assistants for data analysis. *ACM Computing Surveys (CSUR), 45*(3), 1–35.
19. **Vanschoren, J.**, Blockeel, H., Pfahringer, B., & Holmes, G. (2012). Experiment databases. a new way to share, organize and learn from experiments. *Machine learning, 87*(2), 127–158.

Papers at International Conferences

1. Bischl, B., Casalicchio, G., Feurer, M., Hutter, F., Lang, M., Mantovani, R. G., van Rijn, J. N., & **Vanschoren, J.** (2021). OpenML benchmarking suites. In *Proceedings of the Neural Information Processing Systems Track on Datasets and Benchmarks (@NeurIPS 2021)* (In press).
2. Gijsbers, P., Pfisterer, F., van Rijn, J. N., Bischl, B., & **Vanschoren, J.** (2021). Meta-learning for symbolic hyperparameter defaults. In *Genetic and Evolutionary Computation Conference (GECCO 2021)* (pp. 151–152).
3. Gijsbers, P., & **Vanschoren, J.** (2021). GAMA: a General Automated Machine learning Assistant. In *Joint European Conference on Machine Learning and Knowledge Discovery in Databases (ECMLPKDD 2021)* (pp. 560–564).

4. Grootendorst, M., & **Vanschoren, J.** (2019). Beyond bag-of-concepts: Vectors of locally aggregated concepts. In *Joint European Conference on Machine Learning and Knowledge Discovery in Databases (ECMLPKDD 2019)* (pp. 681–696).

5. Bischl, B., Casalicchio, G., Hofner, B., Kerschke, P., Kirchhoff, D., Lang, M., Seibold, H., & **Vanschoren, J.** (2016). Connecting R to the OpenML project for Open Machine Learning. In *UseR! Conference (UseR 2016)* (pp. 1–11).

6. Zhang, C., van Wissen, A., Lakens, D., **Vanschoren, J.**, De Ruyter, B., & IJsselsteijn, W. A. (2016). Anticipating habit formation: A psychological computing approach to behavior change support. In *Proceedings of the 2016 ACM International Joint Conference on Pervasive and Ubiquitous Computing (UbiComp 2016)* (pp. 1247–1254).

7. Eerikäinen, L. M., **Vanschoren, J.**, Rooijakkers, M. J., Vullings, R., & Aarts, R. M. (2015). Decreasing the false alarm rate of arrhythmias in intensive care using a machine learning approach. In *Computing in Cardiology Conference (CinC 2015)* (pp. 293–296).

8. Gao, B., Berendt, B., & **Vanschoren, J.** (2015). Who is more positive in private? Analyzing sentiment differences across privacy levels and demographic factors in Facebook chats and posts. In *Proceedings of the IEEE/ACM International Conference on Advances in Social Networks Analysis and Mining (ASONAM 2015)* (pp. 605–610).

9. Mantovani, R. G., Rossi, A. L., **Vanschoren, J.**, Bischl, B., & Carvalho, A. C. (2015). To tune or not to tune: recommending when to adjust SVM hyper-parameters via meta-learning. In *2015 International Joint Conference on Neural Networks (IJCNN 2015)* (pp. 1–8).

10. Mantovani, R. G., Rossi, A. L., **Vanschoren, J.**, Bischl, B., & De Carvalho, A. C. (2015). Effectiveness of random search in SVM hyper-parameter tuning. In *International Joint Conference on Neural Networks (IJCNN 2015)* (pp. 1–8).

11. van Rijn, J. N., Abdulrahman, S. M., Brazdil, P., & **Vanschoren, J.** (2015). Fast algorithm selection using learning curves. In *International Symposium on Intelligent Data Analysis (IDA 2015)* (pp. 298–309).

12. van Rijn, J. N., Holmes, G., Pfahringer, B., & **Vanschoren, J.** (2015). Having a Blast: Meta-learning and heterogeneous ensembles for data streams. In *IEEE International Conference on Data Mining (ICDM 2015)* (pp. 1003–1008).

13. **Vanschoren, J.**, Bischl, B., Hutter, F., Sebag, M., Kegl, B., Schmid, M., Napolitano, G., Wolstencroft, K., Williams, A. R., & Lawrence, N. (2015). Towards a data science collaboratory. In *International Symposium on Intelligent Data Analysis (IDA 2015)* (Vol. 9385).

14. van Rijn, J. N., Holmes, G., Pfahringer, B., & **Vanschoren, J.** (2014). Algorithm selection on data streams. In *International Conference on Discovery Science (DS 2014)* (pp. 325–336).

15. van Rijn, J. N., Bischl, B., Torgo, L., Gao, B., Umaashankar, V., Fischer, S., Winter, P., Wiswedel, B., Berthold, M. R., & **Vanschoren, J.** (2013). OpenML: A collaborative science platform. In *Joint European conference on machine learning and knowledge discovery in databases (ECMLPKDD 2013)* (pp. 645–649).

16. Leite, R., Brazdil, P., & **Vanschoren, J.** (2012a). Selecting classification algorithms with active testing. In *Machine learning and data mining in pattern recognition (MLDM 2012)* (pp. 117–131).

17. Reutemann, P., & **Vanschoren, J.** (2012). Scientific workflow management with ADAMS. In *Joint European Conference on Machine Learning and Knowledge Discovery in Databases (ECMLPKDD 2012)* (pp. 833–837).

18. Vespier, U., Knobbe, A., Nijssen, S., & **Vanschoren, J.** (2012a). MDL-based analysis of time series at multiple time-scales. In *Joint European Conference on Machine Learning and Knowledge Discovery in Databases (ECMLPKDD 2012)* (pp. 371–386).

19. Vespier, U., Knobbe, A., **Vanschoren, J.**, Miao, S., Koopman, A., Obladen, B., & Bosma, C. (2011). Traffic events modeling for structural health monitoring. In *International Symposium on Intelligent Data Analysis (IDA 2011)* (pp. 376–387).

20. **Vanschoren, J.**, & Blockeel, H. (2009a). A community-based platform for machine learning experimentation. In *Joint European Conference on Machine Learning and Knowledge Discovery in Databases (ECMLPKDD 2009)* (pp. 750–754).

21. **Vanschoren, J.**, & Blockeel, H. (2008). Investigating classifier learning behavior with experiment databases. In *European Conference on Data Analysis (ECDA 2008)* (pp. 421–428).

22. **Vanschoren, J.**, Blockeel, H., Pfahringer, B., & Holmes, G. (2008). Organizing the world's machine learning information. In *International Symposium On Leveraging Applications of Formal Methods, Verification and Validation (ISOLA 2008)* (pp. 693–708).

23. **Vanschoren, J.**, Pfahringer, B., & Holmes, G. (2008). Learning from the past with experiment databases. In *Pacific Rim International Conference on Artificial Intelligence (PRICAI 2008)* (pp. 485–496).

24. Blockeel, H., & **Vanschoren, J.** (2007). Experiment databases: Towards an improved experimental methodology in machine learning. In *Joint European Conference on Machine Learning and Knowledge Discovery in Databases (ECMLPKDD 2007)* (pp. 6–17).

Papers at International Workshops

1. El Baz, A., Guyon, I., Liu, Z., van Rijn, J. N., Treguer, S., & **Vanschoren, J.** (2021). Meta-DeepLearning challenge design and baseline results. In *AAAI 2021 Workshop on Meta-Learning and MetaDL* (pp. 1–16).

2. Schagen, L., & **Vanschoren, J.** (2021). Variational Task Encoders for Model-Agnostic Meta-Learning with Uncertainty over Task Distributions. In *NeurIPS 2021 Workshop on Meta-Learning*.

3. van Lith, J. W., & **Vanschoren, J.** (2021). From strings to data science: A practical framework for automated string handling. In *ECMLPKDD 2021 Workshop on Automated Data Science*.

4. Zhou, F., & **Vanschoren, J.** (2021). Open-Ended Learning Strategies for Learning Complex Locomotion Skills. In *NeurIPS 2021 Workshop on Meta-Learning*.

5. Castelijns, L. A., Maas, Y., & **Vanschoren, J.** (2019). The ABC of data: A classifying framework for data readiness. In *ECMLPKDD 2019 Workshop on Automated Data Science* (pp. 3–16).

6. Celik, B., & **Vanschoren, J.** (2019). Learning to go with the flow: On the adaptability of automated machine learning to evolving data. In *ECMLPKDD 2019 Workshop on Automated Data Science*.

7. El Baz, A., Guyon, I., Lui, Z., van Rijn, J., Treguer, S., & **Vanschoren, J.** (2019). Meta-DeepLearning challenge design and baseline results. In *AAAI 2019 Workshop on Meta-Learning*.

8. Gijsbers, P., LeDell, E., Thomas, J., Poirier, S., Bischl, B., & **Vanschoren, J.** (2019). An open source AutoML benchmark. In *ICML 2019 Workshop on Automated Machine Learning*.

9. Manolache, G., & **Vanschoren, J.** (2019). Meta-Learning for Algorithm and Hyperparameter Optimization with Surrogate Model Ensembles. In *NeurIPS 2019 Workshop on Meta-Learning*.

10. Robles, J. G., & **Vanschoren, J.** (2019). Learning to Reinforcement Learn for Neural Architecture Search. In *NeurIPS 2019 'New in ML' Workshop*.

11. van Hoof, J., & **Vanschoren, J.** (2019). Hyperboost: Hyperparameter Optimization by Gradient Boosting surrogate models. In *ECMLPKDD 2019 Workshop on Automated Data Science*.

12. Publio, G. C., Esteves, D., Ławrynowicz, A., Panov, P., Soldatova, L., Soru, T., **Vanschoren, J.**, & Zafar, H. (2018). ML-schema: exposing the semantics of machine learning with schemas and ontologies. In *ICML 2018 Workshop on Reproducibility in Machine Learning*.

13. van Rijn, J. N., Pfisterer, F., Thomas, J., Muller, A., Bischl, B., & **Vanschoren, J.** (2018). Meta learning for defaults: Symbolic defaults. In *NeurIPS 2018 Workshop on Meta-Learning*.

14. Zhu, Y., Aoun, M., Krijn, M., **Vanschoren, J.**, & Campus, H. T. (2018). Data Augmentation using Conditional Generative Adversarial Networks for Leaf Counting in Arabidopsis Plants. In *BMVC 2018 Workshop on Computer Vision Problems in Plant Phenotyping* (p. 324).

15. Gijsbers, P., **Vanschoren, J.**, & Olson, R. S. (2017). Layered TPOT: Speeding up tree-based pipeline optimization. In *ECMLPKDD 2017 Workshop on Automated Machine Learning*.

16. Abdulrhaman, S. M., Brazdil, P., Van Rijn, J. N., & **Vanschoren, J.** (2015). Algorithm selection via meta-learning and sample-based active testing. In *ECMLPKDD 2015 Workshop on Meta-learning and Algorithm Selection* (pp. 55–66).

17. Mantovani, R. G., Rossi, A. L., **Vanschoren, J.**, & de Carvalho, A. C. (2015). Meta-learning Recommendation of Default Hyper-parameter Values for SVMs in Classification Tasks. In *ECMLPKDD 2015 Workshop on Meta-learning and Algorithm Selection* (pp. 80–92).

18. Van Rijn, J. N., & **Vanschoren, J.** (2015). Sharing RapidMiner Workflows and Experiments with OpenML. In *ECMLPKDD 2015 Workshop on Meta-learning and Algorithm Selection* (pp. 93–103).

19. **Vanschoren, J.**, Rijn, J. N., & Bischl, B. (2015). Taking machine learning research online with OpenML. In *Workshop on Big Data, Streams and Heterogeneous Source Mining (BigMine 2015)* (pp. 1–4).

20. Vukicevic, M., Radovanovic, S., **Vanschoren, J.**, Napolitano, G., & Delibasic, B. (2015). Towards a Collaborative Platform for Advanced Meta-Learning in Healthcare Predictive Analytics. In *ECMLPKDD 2015 Workshop on Meta-learning and Algorithm Selection* (pp. 112–114).

21. Van Rijn, J. N., Holmes, G., Pfahringer, B., & **Vanschoren, J.** (2014). Towards meta-learning over data streams. In *ECMLPKDD 2014 Workshop on Meta-learning and Algorithm Selection* (pp. 37–38).

22. Leite, R., Brazdil, P., & **Vanschoren, J.** (2012b). Selecting classification algorithms with active testing on similar datasets. In *ECAI 2012 Workshop on Planning to Learn* (pp. 20–28).

23. **Vanschoren, J.** (2012). The experiment database for machine learning. In *ECAI 2012 Workshop on Planning to Learn* (pp. 30–38).

24. Vespier, U., Knobbe, A., Nijssen, S., & **Vanschoren, J.** (2012b). MDL-Based Identification of Relevant Temporal Scales in Time Series. In *Workshop on Information Theoretic Methods in Science and Engineering (WITMSE 2012)* (pp. 64–72).

25. **Vanschoren, J.**, & Blockeel, H. (2010). Experiment databases for machine learning. In *NeurIPS 2008 Workshop on Machine Learning Open Source Software* (pp. 335–361).

26. **Vanschoren, J.**, Blockeel, H., Pfahringer, B., & Holmes, G. (2010). Experiment databases for machine learning. In *ICML 2008 Planning to Learn Workshop* (pp. 335–361).

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