

Antoine LEDENT

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Summary Statement

Antoine Ledent is a tenure-track Assistant Professor in Computer Science at SCIS with expertise spanning Recommender Systems, Deep Learning, Statistical Learning Theory, Computer Vision and Stochastic Analysis.

Education

PhD, University of Luxembourg, Luxembourg, 2017

Bachelor of Arts, University of Cambridge, Great Britain, 2013

Master of Mathematics, University of Cambridge, Great Britain, 2013

Skill Set

Probability, Statistical Learning Theory, Machine Learning, Data Science, Stochastic Analysis.

Academic Appointments

Assistant Professor of Computer Science, School of Computing and Information Systems, SMU, Jul 2022 - Present

Awards and Honors

Certificate of Excellence in Reviewing, ACM SIGKDD Conference on Knowledge Discovery and Data mining, 2023

Outstanding Reviewer Award (top 8-10 percent), International Conference on Machine Learning, 2022, 2021

Highlighted Reviewer (top 8-10 percent), International Conference on Learning Representations (ICLR), 2022

Top Reviewer, Advances in Neural Information Processing (NeurIPS), 2022

Top 25 percent of Reviewers, Association for the Advancement of Artificial Intelligence (AAAI), 2021

Best reviewer award (top 10 percent), Advances in Neural Information Processing (NeurIPS), 2020

Professional Memberships

Member, Association for the Advancement of Artificial Intelligence (AAAI), 2020

RESEARCH

Research Interests

Machine Learning, Artificial Intelligence, Statistical Learning Theory, Matrix Completion, Recommender Systems, Deep Learning Theory, Computer Vision, Time Series Analysis, Stochastic Analysis.

Publications

Journal Articles [Refereed]

Recommendations with minimum exposure guarantees: A post-processing framework, by LOPES, Ramon; ALVES, Rodrigo; LEDENT, Antoine; SANTOS, Rodrygo L. T.; KLOFT, Marius. (2024). *Expert Systems with Applications*, 236 1-9. <https://doi.org/10.1016/j.eswa.2023.121164> (Published)

Uncertainty-Adjusted Recommendation via Matrix Factorization With Weighted Losses, by ALVES, Rodrigo; LEDENT, Antoine; KLOFT, Marius. (2023). *IEEE Transactions on Neural Networks and Learning Systems*, 1-14. <https://doi.org/10.1109/TNNLS.2023.3288769> (Advance Online)

Orthogonal Inductive Matrix Completion, by LEDENT, Antoine; ALVES, Rodrigo; KLOFT, Marius. (2023). *IEEE Transactions on Neural Networks and Learning Systems*, 34 (5), 1-12. <https://doi.org/10.1109/TNNLS.2021.3106155> (Published)

Conference Proceedings

Uncertainty-adjusted inductive matrix completion with Graph Neural Networks, by KASALICKY, Petr; LEDENT, Antoine; ALVES, Rodrigo. (2023.0). *RecSys '23: Proceedings of the 17th ACM Conference on Recommender Systems, Singapore, September 18-22*, (pp. 1169-1174) New York: ACM. <https://doi.org/10.1145/3604915.3610654> (Published)

Generalization bounds for inductive matrix completion in low-noise settings, by LEDENT, Antoine; ALVES, Rodrigo; LEI, Yunwen; GUERMEUR, Yann; KLOFT, Marius. (2023.0). *Proceedings of the 36th AAAI Conference on Artificial Intelligence, Washington, 2023 February 7-14*, (pp. 8447-8455) Washington: AAAI Press. <https://doi.org/10.1609/aaai.v37i7.26018> (Published)

Fine-grained generalization analysis of inductive matrix completion, by LEDENT, Antoine; ALVES, RODRIGO; LEI, Yunwen; KLOFT, Marius. (2021.0). *Proceedings of the 35th Conference on Neural Information Processing System (NeurIPS 2021), Virtual Conference, December 6-12*, (pp. 25540-25552) Virtual Conference: <https://proceedings.neurips.cc/paper/2021/hash/d6428eecbe0f7dff83fc607c5044b2b9-Abstract.html> (Published)

Beyond smoothness : Incorporating low-rank analysis into nonparametric density estimation, by VANDERMEULEN, Rob; LEDENT, Antoine. (2021.0). *Advances in Neural Information Processing Systems (NeurIPS 2021): December 7-10, Virtual: Proceedings*, (pp. 12180-12193) San Diego: NIPs Foundation. <https://arxiv.org/abs/2204.00930> (Published)

Burst-induced Multi-Armed Bandit for learning recommendation, by ALVES, Rodrigo; LEDENT, Antoine; KLOFT, Marius. (2021.0). *RecSys '21: Proceedings of the 15th ACM Conference on Recommender Systems, September 27 - October 1, Amsterdam*, (pp. 292-301) New York: ACM. <https://doi.org/10.1145/3460231.3474250> (Published)

Fine-grained analysis of structured output prediction, by MUSTAFA, Waleed; LEI, Yunwen; LEDENT, Antoine; and KLOFT, Marius. (2021.0). *Proceedings of the Thirtieth International Joint Conference on Artificial Intelligence, Montreal, 2021 August 19-27*, (pp. 2841-2847) International Joint Conferences on Artificial Intelligence: International Joint Conferences on Artificial Intelligence.

<https://doi.org/10.24963/ijcai.2021/391> (Published)

Learning interpretable concept groups in CNNs, by VARSHNEYA, Saurabh; LEDENT, Antoine; VANDERMEULEN, Rob; LEI, Yunwen; ENDERS, Matthias; BORTH, Damian; KLOFT, Marius. (2021.0). *Proceedings of the Thirtieth International Joint Conference on Artificial Intelligence, Montreal, 2021 August 19-27*, (pp. 1061-1067) Montreal, Canada: IJCAI. <https://doi.org/10.24963/ijcai.2021/147> (Published)

An empirical study of the discreteness prior in low-rank matrix completion, by ALVES, Rodrigo; LEDENT, Antoine; ASSUNÇÃO, Renato; and KLOFT, Marius. (2021.0). *Proceedings of the NeurIPS 2020 Workshop on Pre-registration in Machine Learning, Virtual Conference, December 13-20*, (pp. 111-125) Virtual Conference: <https://proceedings.mlr.press/v148/alves21a.html> (Published)

Norm-based generalisation bounds for deep multi-class convolutional neural networks, by LEDENT, Antoine; MUSTAFA, Waleed; LEI, Yunwen; KLOFT, Marius. (2021.0). *Proceedings of the 35th AAAI Conference on Artificial Intelligence 2021: February 2-9, Virtual*, (pp. 8279-8287) Palo Alto, CA: AAAI Press. <https://ojs.aaai.org/index.php/AAAI/article/view/17007> (Published)

Model uncertainty guides visual object tracking, by ZHOU, Lijun; LEDENT, Antoine; HU, Qintao; LIU, Ting; ZHANG, Jianlin; KLOFT, Marius. (2021.0). *Proceedings of the 35th AAAI Conference on Artificial Intelligence 2021: February 2-9, Virtual*, (pp. 3581-3589) Palo Alto, CA: AAAI Press. (Published)

Fine-grained generalization analysis of vector-valued learning, by WU, Liang; LEDENT, Antoine; LEI, Yunwen; KLOFT, Marius. (2021.0). *Proceedings of the 35th AAAI Conference on Artificial Intelligence: February 2-9, Virtual*, (pp. 10338-10346) Palo Alto, CA: AAAI Press. <https://ojs.aaai.org/index.php/AAAI/article/view/17238> (Published)

Sharper generalisation bounds for pairwise learning, by LEI, Yunwen; LEDENT, Antoine; KLOFT, Marius. (2020.0). *Proceedings of the 35th Conference on Neural Information Processing System (NeurIPS 2020), Virtual Conference, December 6-12*, (pp. 21236-21246) Virtual Conference: (Published)

Conference Papers

Improved generalisation bounds for deep learning through L^∞ covering numbers, by LEDENT, Antoine; LEI, Yunwen; KLOFT, Marius. (2019.0). *NeurIPS 2019 Workshop on Machine Learning with Guarantees, Vancouver, Canada, 14 December*, Vancouver, Canada. <https://sites.google.com/view/mlwithguarantees/accepted-papers> (Published)

Research Grants

Singapore Management University

Implicit feedback as side information in MF-based Recommender Systems, SMU Internal Grant, Ministry of Education (MOE) Tier 1 , PI (Project Level): Antoine LEDENT, 2022, S\$100,000

Other Institutions

The Data-dependency Gap: A New Problem in the Learning Theory of Convolutional Neural Networks, SFPP2298, DFG (National Research Institute of Germany) KLOFT, Marius, KLOFT, Marius, EUR297,100

TEACHING

Teaching Areas

Machine Learning, Data Science, Statistics, Linear Algebra.

Courses Taught

Singapore Management University

Undergraduate Programmes :

- Introduction to Artificial Intelligence
- Linear Algebra for Computing Applications
- Principles of Machine Learning

THESES AND DISSERTATIONS

Theses and Dissertations Assessed

Other Institutions

Co Supervisor, "Orthogonal Inductive Tensor Completion (OTIC).", Dissertation by Justus Will, Bachelor's Thesis in Computer Science. , TU Kaiserslautern, 2020

Co Supervisor, "Inducing Interpretability in Convolutional Neural Networks via Regularization Methods", Dissertation by Saurabh Varshneya, Masters' degree in Computer Science. , TU Kaiserslautern, 2019

Co Supervisor, "Interpretable Multimodal Deep Learning.", Dissertation by Purvanshi Mehta, Internship report, TU Kaiserslautern, 2019

UNIVERSITY SERVICE

Singapore Management University

Interviewer for candidates to our undergraduate programme, CS admissions committee, Mar 2023 - Apr 2023

EXTERNAL SERVICE – PROFESSIONAL

Reviewer Journal Article, Transactions of Machine Learning Research, 2023 - Present

Reviewer Journal Article, Transactions on Pattern Analysis and Machine Intelligence (TPAMI), 2023

Reviewer Conference Paper, International Joint Conference on Artificial Intelligence (IJCAI), 2023

Reviewer Conference Paper, ACM SIGKDD conference on Knowledge Discovery and Data mining, 2023

Reviewer Journal Article, International Journal of Information Technology and Decision Making, 2022 - 2023

Reviewer Journal Article, Transactions on Neural Networks and Learning Systems, 2022

Reviewer Conference Paper, International Conference on Learning Representations (ICLR), 2022 - Present

Reviewer Journal Article, Transactions of Signal Processing , 2021 - Present

Reviewer Conference Paper, Advances in Neural Information Processing (NeurIPS) , 2020 - Present
Reviewer Conference Paper, International Conference on Machine Learning (ICML), 2020 - Present
Reviewer Conference Paper, Association for the Advancement of Artificial Intelligence (AAAI), 2020 - 2023
Reviewer Conference Paper, European Conference on Machine Learning (ECML), 2020
Reviewer Journal Article, Neural Networks, 2019
Reviewer Conference Paper, Knowledge Discovery in Databases (KDD), 2019
Reviewer Conference Paper, Conference on Artificial Intelligence and Statistics (AiStats), 2019