

# Aleksander Mądry

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ACADEMIC POSITIONS	MASSACHUSETTS INSTITUTE OF TECHNOLOGY	
	<b>Cadence Design Systems Professor of Computing</b>	2021–present
	<b>Professor of Computer Science</b>	2020–present
	<b>Associate Professor of Computer Science with Tenure</b>	2018–2020
	<b>Associate Professor of Computer Science without Tenure</b>	2017–2018
	<b>Assistant Professor of Computer Science</b>	2015–2017
	<b>Principal Investigator</b> in the Computer Science and Artificial Intelligence Laboratory (CSAIL)	2015–present
	ÉCOLE POLYTECHNIQUE FÉDÉRALE DE LAUSANNE	
	<b>Assistant Professor of Computer Science</b>	2012–2015
	MICROSOFT RESEARCH NEW ENGLAND	
<b>Postdoctoral Researcher</b>	2011–2012	
EDUCATION	MASSACHUSETTS INSTITUTE OF TECHNOLOGY	
	<b>Ph.D. in Computer Science</b>	2011
	Dissertation: “From Graphs to Matrices, and Back: New Techniques for Graph Algorithms” <i>George M. Sprowls Dissertation Award</i> and <i>ACM Doctoral Dissertation Award Honorable Mention</i>	
	<b>M.Sc. in Computer Science</b>	2009
	Master’s Thesis: “Faster Generation of Random Spanning Trees”	
	UNIVERSITY OF WROCLAW	
	<b>Licencjat Degree</b> (B.Sc. equivalent) <b>in Theoretical Physics</b>	2007
<b>Magister Degree</b> (B.Sc.+M.Sc. equivalent) <b>in Computer Science</b>	2006	
AWARDS AND HONORS	<b>Presburger Award</b>	2018
	<b>Invited speaker at International Congress of Mathematicians (ICM)</b>	2018
	<b>Google Research Award</b>	2017
	<b>Alfred P. Sloan Research Fellowship</b>	2016
	<b>NSF CAREER Award</b>	2015
	<b>Best Paper Award</b> at the IEEE Symposium on Foundations of Computer Science (FOCS)	2013
	<b>Best Paper Award</b> at the IEEE Symposium on Foundations of Computer Science (FOCS)	2011
	<b>ACM Doctoral Dissertation Award Honorable Mention</b>	2011
	<b>George M. Sprowls Dissertation Award</b> (awarded to the best MIT doctoral theses in CS)	2011
	<b>Best Paper Award</b> at the ACM Symposium on Theory of Computing (STOC)	2011
	<b>Best Paper Award</b> at the ACM-SIAM Symposium on Discrete Algorithms (SODA)	2010

## TEACHING

MASSACHUSETTS INSTITUTE OF TECHNOLOGY	
6.S967 – <i>Online Decision Making: Optimization, Control and Games</i>	Spring 2022
6.883 – <i>Data-Driven Decision Making and Society</i>	Spring 2021
6.046 – <i>Design and Analysis of Algorithms</i>	Fall 2020
6.046 – <i>Design and Analysis of Algorithms</i>	Spring 2020
6.854 – <i>Advanced Algorithms</i>	Fall 2019
6.S979 – <i>Topics in Deployable ML</i>	Fall 2019
6.046 – <i>Design and Analysis of Algorithms</i>	Spring 2019
6.854 – <i>Advanced Algorithms</i>	Fall 2018
6.046 – <i>Design and Analysis of Algorithms</i>	Spring 2018
6.883 – <i>Science of Deep Learning: Bridging Theory and Practice</i>	Spring 2018
6.046 – <i>Design and Analysis of Algorithms</i>	Spring 2017
6.854 – <i>Advanced Algorithms</i>	Fall 2016
6.006 – <i>Introduction to Algorithms</i>	Spring 2016
6.S978 – <i>Graphs, Linear Algebra, and Optimization</i>	Fall 2015
ÉCOLE POLYTECHNIQUE FÉDÉRALE DE LAUSANNE	
CS-352 – <i>Theoretical Computer Science</i>	Fall 2014
CS-251 – <i>Theory of Computation</i>	Spring 2014
CS-352 – <i>Theoretical Computer Science</i>	Fall 2013
CS-252 – <i>Advanced Theoretical Computer Science</i>	Spring 2013
CS-621 – <i>Theory Gems</i>	Fall 2012

## PUBLICATIONS (\* denotes alphabetic ordering of authors)

- *Datamodels: Predicting Predictions from Training Data*, A. Ilyas, S. M. Park, L. Engstrom, G. Leclerc, A. Mądry. *ICML 2022*.
- *Combining Diverse Feature Priors*, S. Jain, D. Tsipras, A. Mądry. *ICML 2022*.
- *Adversarially Trained Neural Representations Are Already as Robust as Biological Neural Representations*, C. Guo, M. Lee, G. Leclerc, J. Dapello, Y. Rao, A. Mądry, J. DiCarlo. *ICML 2022*. Long presentation.
- *Certified Patch Robustness via Smoothed Vision Transformers*, H. Salman, S. Jain, E. Wong, A. Mądry. *CVPR 2022*.
- *Missingness Bias in Model Debugging*, S. Jain, H. Salman, E. Wong, P. Zhang, V. Vineet, S. Vemprala, A. Mądry. *ICLR 2022*.
- *Editing a Classifier by Rewriting Its Prediction Rules*, S. Santurkar, D. Tsipras, M. Elango, D. Bau, A. Torralba, A. Mądry. *NeurIPS 2021*.
- *Unadversarial Examples: Designing Objects for Robust Vision*, H. Salman, A. Ilyas, L. Engstrom, S. Vemprala, A. Mądry, A. Kapoor. *NeurIPS 2021*.
- *Leveraging Sparse Linear Layers for Debuggable Deep Networks*, E. Wong, S. Santurkar, A. Mądry. *ICML 2021*. Oral presentation.
- *BREEDS: Benchmarks for Subpopulation Shift*, S. Santurkar, D. Tsipras, A. Mądry. *ICLR 2021*.
- *Noise or Signal: The Role of Image Backgrounds in Object Recognition*, K. Xiao, A. Ilyas, L. Engstrom, A. Mądry. *ICLR 2021*.
- *Do Adversarially Robust ImageNet Models Transfer Better?*, H. Salman, A. Ilyas, L. Engstrom, A. Kapoor, A. Mądry. *NeurIPS 2020*. Oral presentation.
- *On Adaptive Attacks to Adversarial Example Defenses*, F. Tramer, N. Carlini, W. Brendel, A. Mądry. *NeurIPS 2020*.
- *Circulation Control for Faster Minimum Cost Flow in Unit-Capacity Graphs\**, K. Axiotis, A. Mądry, A. Vladu. *FOCS 2020*.

- *From ImageNet to Image Classification: Contextualizing Progress on Benchmarks*, D. Tsipras, S. Santurkar, L. Engstrom, A. Ilyas, A. Mądry. *ICML 2020*.
- *Identifying Statistical Bias in Dataset Replication*, L. Engstrom, A. Ilyas, S. Santurkar, D. Tsipras, J. Steinhardt, A. Mądry. *ICML 2020*.
- *A Closer Look at Deep Policy Gradients*, A. Ilyas, L. Engstrom, S. Santurkar, D. Tsipras, F. Janoos, L. Rudolph, A. Mądry. *ICLR 2020*. *Oral presentation*.
- *Implementation Matters in Deep RL: A Case Study on PPO and TRPO*, L. Engstrom, A. Ilyas, S. Santurkar, D. Tsipras, F. Janoos, L. Rudolph, A. Mądry. *ICLR 2020*. *Oral presentation*.
- *Adversarial Examples Are Not Bugs, They Are Features*, A. Ilyas, S. Santurkar, D. Tsipras, L. Engstrom, B. Tran, A. Mądry. *NeurIPS 2019*. *Spotlight presentation*.
- *Image Synthesis with a Single (Robust) Classifier*, S. Santurkar, D. Tsipras, B. Tran, A. Ilyas, L. Engstrom, A. Mądry. *NeurIPS 2019*.
- *Exploring the Landscape of Spatial Robustness*, L. Engstrom, B. Tran, D. Tsipras, L. Schmidt, A. Mądry. *ICML 2019*.
- *Robustness May Be at Odds with Accuracy*, D. Tsipras, S. Santurkar, L. Engstrom, A. Turner, A. Mądry. *ICLR 2019*.
- *Prior Convictions: Black-Box Adversarial Attacks with Bandits and Priors*, A. Ilyas, L. Engstrom, A. Mądry. *ICLR 2019*.
- *Training for Faster Adversarial Robustness Verification via Inducing ReLU Stability*, K. Xiao, V. Tjeng, N. M. Shafiullah, A. Mądry. *ICLR 2019*.
- *How Does Batch Normalization Help Optimization?*, S. Santurkar, D. Tsipras, A. Ilyas, A. Mądry. *NeurIPS 2018*. *Oral presentation*.
- *Adversarially Robust Generalization Requires More Data*, L. Schmidt, S. Santurkar, D. Tsipras, K. Talwar, A. Mądry. *NeurIPS 2018*. *Spotlight presentation*.
- *Spectral Signatures in Backdoor Attacks on Neural Networks*, J. Li, B. Tran, A. Mądry. *NeurIPS 2018*.
- *A Classification-Based Study of Covariate Shift in GAN Distributions*, S. Santurkar, L. Schmidt, A. Mądry. *ICML 2018*.
- *On the Limitations of First-Order Approximation in GAN Dynamics\**, J. Li, J. Peebles, A. Mądry, L. Schmidt. *ICML 2018*.
- *k-Server via Multiscale Entropic Regularization\**, S. Bubeck, M. B. Cohen, J. R. Lee, Y.-T. Lee, A. Mądry. *STOC 2018*.
- *Round Compression for Parallel Matching Algorithms\**, A. Czumaj, J. Łącki, A. Mądry, S. Mitrović, K. Onak, P. Sankowski. *STOC 2018*.
- *Towards Deep Learning Models Resistant to Adversarial Attacks\**, A. Mądry, A. Makelov, L. Schmidt, D. Tsipras, A. Vladu. *ICLR 2018*.
- *A Fast Algorithm for Separated Sparsity via Perturbed Lagrangians\**, A. Mądry, S. Mitrović, L. Schmidt, *AISTATS 2018*.
- *Matrix Scaling and Balancing via Box Constrained Newton's Method and Interior Point Methods\**, M. B. Cohen, A. Mądry, D. Tsipras, A. Vladu. *FOCS 2017*.
- *Negative-Weight Shortest Paths and Unit Capacity Minimum Cost Flow in  $O(m^{10/7} \log W)$  Time\**, M. B. Cohen, A. Mądry, P. Sankowski, A. Vladu. *SODA 2017*.
- *Computing Maximum Flow with Augmenting Electrical Flows\**, A. Mądry. *FOCS 2016*. *Invited to the Special Issue*.
- *On the Resiliency of Randomized Routing Against Multiple Edge Failures\**, M. Chiesa, A. Gurtov, A. Mądry, S. Mitrović, I. Nikolaevskiy, M. Schapira, S. Shenker, *ICALP 2016*.

- *The Quest for Resilient (Static) Forwarding Tables\**, M. Chiesa, I. Nikolaevskiy, A. Mądry, S. Mitrović, A. Panda, A. Gurtov, M. Schapira, S. Shenker. *INFOCOM 2016*.
- *Fast Generation of Random Spanning Trees and the Effective Resistance Metric\**, A. Mądry, D. Straszak, J. Tarnawski. *SODA 2015*.
- *On the Configuration LP for Maximum Budgeted Allocation\**, C. Kalaitzis, A. Mądry, A. Newman, L. Poláček, O. Svensson. *IPCO 2014. Mathematical Programming*, Volume 154 Issue 1, 2015.
- *Navigating Central Path with Electrical Flows: from Flows to Matchings, and Back\**, A. Mądry. *FOCS 2013. Best Paper Award*.
- *Runtime Guarantees for Regression Problems\**, H. H. Chin, A. Mądry, G. Miller, R. Peng. *ITCS 2013*.
- *A Polylogarithmic-Competitive Algorithm for the  $k$ -Server Problem\**, N. Bansal, N. Buchbinder, A. Mądry, S. Naor). *FOCS 2011. Best Paper Award. Journal of the ACM*, Volume 62 Issue 5, 2015.
- *Electrical Flows, Laplacian Systems, and Faster Approximation of Maximum Flow in Undirected Graphs\**, P. Christiano, J. Kelner, A. Mądry, D. Spielman, S.-H. Teng. *STOC 2011. Best Paper Award*.
- *The Semi-stochastic Ski-rental Problem\**, A. Mądry, D. Panigrahi. *FSTTCS 2011*.
- *Fast Approximation Algorithms for Cut-based Problems in Undirected Graphs\**, A. Mądry. *FOCS 2010*.
- *Faster Approximation Schemes for Fractional Multicommodity Flow Problems via Dynamic Graph Algorithms\**, A. Mądry. *STOC 2010*.
- *An  $O(\log n / \log \log n)$ -approximation Algorithm for the Asymmetric Traveling Salesman Problem\**, A. Asadpour, M. Goemans, A. Mądry, S. Oveis Gharan, and A. Saberi. *SODA 2010. Best Paper Award. Operations Research*.
- *Faster Generation of Random Spanning Trees\**, J. Kelner, A. Mądry. *FOCS 2009*.
- *Maximum Bipartite Flow in Networks with Adaptive Channel Width\**, Y. Azar, A. Mądry, T. Moscibroda, D. Panigrahi, A. Srinivasan. *ICALP 2009. TCS*, Volume 412 Issue 24, 2011. *Special issue*.
- *Susceptible Two-Party Quantum Computations\**, A. Jacoby, M. Liśkiewicz, A. Mądry. *ICITS 2008*.
- *Geometric Aspects of Online Packet Buffering: An Optimal Randomized Algorithm for Two Buffers\**, M. Bienkowski, A. Mądry. *LATIN 2008*.
- *Data Exchange: On the Complexity of Answering Queries with Inequalities\**, A. Mądry. *Information Processing Letters*, Vol. 94, Issue 6 (June 2005).

PROFESSIONAL	(Senior) Area Chair for Neural Information Processing Systems (NeurIPS)	2020-2021
SERVICE	Area Chair for the International Conference on Learning Representations (ICLR)	2019-2021
(SELECTED)	Area Chair for the International Conference on Machine Learning (ICML)	2020-2021
	Co-chairing Simons Institute's "Foundations of Deep Learning" program	2019
	Program committee of the IEEE Symposium on Foundations of Computer Science (FOCS)	2018
	PC of the ACM Symposium on Parallelism in Algorithms and Architectures (SPAA)	2017
	Co-chairing Simons Institute's "Bridging Continuous and Discrete Optimization" program	2017
	Program committee of the ACM Symposium on Theory of Computing (STOC)	2017
	Member of the Steering Committee of the European Symposium on Algorithms	2015-2020
	Member of the Steering Committee of the Highlights of Algorithms Conference	2015-2018
	Program committee of the Intl. Workshop on Randomization and Computation (RANDOM)	2015
	Co-founder of the Interest Group on Algorithmic Foundations of Information Technology	2014
	Program committee of the IEEE Symposium on Foundations of Computer Science (FOCS)	2014
	Program committee of the Scandinavian Symposium and Workshops on Algorithm Theory	2014
	Program committee of the European Symposium on Algorithms (ESA)	2014
	Program committee of the ACM Symposium on Theory of Computing (STOC)	2013
	Program committee of the ACM-SIAM Symposium on Discrete Algorithms (SODA)	2013