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EDUCATION	<b>Stanford University</b> , Stanford, CA	
	<i>Ph.D Candidate</i> , Department of Statistics. <i>Advisor</i> : Prof. Andrea Montanari	2017–2023
	<ul style="list-style-type: none"> <li>• Thesis committee: Andrea Montanari, David Donoho, Iain Johnstone</li> <li>• Title: <i>Statistical and computational aspects of learning with neural networks in high-dimension.</i></li> </ul>	
	<i>M.Sc. in Statistics</i> , Department of Statistics	2017–2020
	<b>Ecole Normale Supérieure</b> , Paris, France	
	<i>M.Sc. in Theoretical Physics</i> at <i>International Center of Fundamental Physics</i>	2014–2016
	<i>B.Sc. in Mathematics</i> , Department of Mathematics	2013–2014
	<i>B.Sc. in Physics</i> , Department of Physics	2013–2014
INTERNSHIPS	<b>EPFL</b> , Lausanne, Switzerland	Jun. 2022 - Sep. 2022
	Visiting student at the <i>Mathematics Department</i> . <i>Advisor</i> : Prof. Emmanuel Abbe	
	<b>G-Research</b> , London, UK	Jul. 2019 - Sep. 2019
	Summer intern (quant intern)	
	<b>MIT</b> , Cambridge, MA	Feb. 2017 - Jul. 2017
	Visiting student at the <i>Laboratory for Information and Decision Systems</i> and <i>Institute for Data, Systems and Society</i> , EECS Department. <i>Advisor</i> : Prof. Guy Bresler	
	<b>Los Alamos National Laboratory</b> , Los Alamos, NM	
	Visiting student at the <i>Center for Non-Linear Studies</i> . <i>Advisors</i> : Michael Chertkov & Marc Vuffray	
	<ul style="list-style-type: none"> <li>• Funded by <i>D-Wave Quantum Computing grant</i></li> <li>• Power Grid Spectroscopy project, NMC, sponsored by the NSF</li> </ul>	Jun. 2016 - Sep. 2016 Feb. 2015 - Jul. 2015
	<b>Ecole Polytechnique</b> , Palaiseau, France	Jan. 2016 - Mar. 2016
	Intern at the <i>Laboratoire Leprince-Ringuet</i> , joint position CNRS and CERN. CMS experiment at Large Hadron Collider (LHC), CERN, Geneva <i>Advisor</i> : Scientist Christophe Ochando	
	<b>Paris-Diderot University (Paris VII)</b> , Paris, France	Jun. 2014 - Aug. 2014
	Summer intern at the <i>Astroparticle and Cosmology Laboratory</i> (APC) Cosmology and Gravitation theory group. <i>Advisor</i> : Prof. Daniele Steer	
TEACHING	<b>Teaching Assistant</b> , Stanford University	2017–2023
	Data Science 101 (STATS 101), Introduction to Statistical Inference (STATS 200), Data Mining and Analysis (STATS 202), Theory of Probability (STATS 116), Stochastic Processes (STATS 310C), Measure Theory (STATS 310A), Introduction to Calculus (MATH 20), Mathematical Problems in Machine Learning (STATS 375), Introduction to Statistical Learning (STATS 216), Random Processes on Graphs and Lattices (STATS 221), Statistical Methods in Engineering and the Physical Sciences (STATS 110)	
	<b>Teaching Assistant</b> , Deep Learning Theory Summer School, Princeton	Aug. 2021
HONOURS AND AWARDS	<b>Silver medal</b> at the <i>43rd International Physics Olympiads</i> , Tallinn, Estonia	Jul. 2012
	<b>2nd Prize Physics</b> and <b>Honors Maths</b> , Concours General (National Competition)	Jul. 2011
	<b>1st Prize</b> , French National Physics Olympiads	Dec. 2010
RESEARCH INTERESTS	1. Theory of Deep Learning: mean-field description and neural tangent kernel 2. Kernel and random feature methods in high-dimension (benign overfitting, multiple descent, etc.) 3. Non-convex optimization, implicit regularization, landscape analysis 4. Computational limits of learning with neural networks 5. Random matrix theory, high-dimensional probability	

PUBLICATIONS  
(IN PRESS)

1. Hong Hu, Yue M. Lu, Theodor Misiakiewicz, Jeffrey Pennington, Lechao Xiao. Precise Learning Curves and Higher-Order Scalings for Dot-product Kernel Regression. *Neural Information Processing Systems Conference*, 2022.
2. Theodor Misiakiewicz, Song Mei. Learning with convolution and pooling operations in kernel methods. *Neural Information Processing Systems Conference*, 2022.
3. Emmanuel Abbe, Enric Boix-Adsera, Theodor Misiakiewicz. The merged-staircase property: a necessary and nearly sufficient condition for SGD learning of sparse functions on two-layer neural networks. In *Conference on Learning Theory*, pp. 4782–4887. PMLR, 2022.
4. Song Mei, Theodor Misiakiewicz, Andrea Montanari. Generalization error of random feature and kernel methods: hypercontractivity and kernel matrix concentration. *Applied and Computational Harmonic Analysis*, 59, 3–84, 2022.
5. Song Mei, Theodor Misiakiewicz, Andrea Montanari. Learning with invariances in random features and kernel models. In *Conference on Learning Theory*, pp. 3351–3418. PMLR, 2021.
6. Behrooz Ghorbani, Song Mei, Theodor Misiakiewicz, Andrea Montanari. Linearized two-layers neural networks in high dimension. *The Annals of Statistics*, 49(2), pp. 1029–1054, 2021.
7. Behrooz Ghorbani, Song Mei, Theodor Misiakiewicz, Andrea Montanari. When do neural networks outperform kernel methods? *Advances in Neural Information Processing Systems*, 33, pp. 14820–14830, 2020.
8. Behrooz Ghorbani, Song Mei, Theodor Misiakiewicz, Andrea Montanari. Discussion of: "Non-parametric regression using deep neural networks with ReLU activation function". *The Annals of Statistics*, 48(4), pp. 1898–1901, 2020.
9. Song Mei, Theodor Misiakiewicz, Andrea Montanari. Mean-field theory of two-layers neural networks: dimension-free bounds and kernel limit. In *Conference on Learning Theory*, pp. 2388–2464. PMLR, 2019.
10. Behrooz Ghorbani, Song Mei, Theodor Misiakiewicz, Andrea Montanari. Limitations of Lazy Training of Two-layers Neural Networks, *Advances in Neural Information Processing Systems*, 32, 2019.
11. Song Mei, Theodor Misiakiewicz, Andrea Montanari, Roberto Imbuzeiro Oliveira. Solving SDPs for synchronization and MaxCut problems via the Grothendieck inequality. In *Conference on learning theory*, pp. 1476–1515. PMLR, 2017.
12. Marc Vuffray, Theodor Misiakiewicz. Concentration to zero bit-error probability for regular LDPC codes on the binary symmetric channel: Proof by loop calculus. In *53rd Annual Allerton Conference on Communication, Control, and Computing (Allerton)*, pp. 115–124. IEEE, 2015.

INVITED  
TALKS

<i>Optimal Transport, Mean-Field Models, and Machine Learning</i>	Apr. 2023
TUM Institute for Advanced Study, Munich, Germany	
<i>ML theory seminar (alg-ml)</i> , Princeton	Nov. 2022
<i>Topics in Theory of Neural Networks</i> , INFORMS	Oct. 2022
<i>Information Systems Laboratory (ISL) Colloquium</i> , Stanford	Oct. 2022
<i>External FLAIR seminar</i> , EPFL	Sep. 2022
<i>Learning: Optimization and Stochastics (Summer Research Institute 2022)</i> , EPFL	Jun. 2022
<i>Mathematics of Deep Learning</i> , ELLIS	Jun. 2022

	<i>New Interactions Between Statistics and Optimization workshop</i> , BIRS, Banff	May 2022
	<i>Deep Learning Theory Symposium workshop</i> , Simons Institute, Berkeley	Dec. 2021
	<i>Geometric Methods in Optimization and Sampling</i> , Simons Institute, Berkeley	Oct. 2021
	<i>Youth in High-Dimensions</i> , ICTP, Trieste	Jun. 2021
	<i>NSF-Simons Journal Club</i>	Apr. 2021
	<i>External Seminar</i> , G-Research	Feb. 2021
	<i>ML Foundations seminar</i> , Microsoft Research	Nov. 2020
	<i>MoDL (NSF collaboration)</i>	Oct. 2020
SERVICE AND LEADERSHIP	<p><b>Organizer:</b> reading group on the <i>Mean-Field description of neural networks</i> Fall 2021</p> <p><i>Geometric Methods in Optimization and Sampling</i> program, Simons Institute, Berkeley</p> <p><b>Area Chair:</b> CML Workshop on Information-Theoretic Methods for Rigorous, Responsible, and Reliable Machine Learning</p> <p><b>Reviewer:</b> SIAM Journal on Mathematics of Data Science (SIMODS), Journal of Machine Learning Research (JMLR), Neural Information Processing Systems (NeurIPS), International Conference on Machine Learning (ICML), Conference on Learning Theory (COLT), Symposium on Foundations of Computer Science (FOCS), IEEE Transactions on Information Theory, Journal of the Royal Statistical Society: Series B (Statistical Methodology), Proceedings of the National Academy of Sciences (PNAS), International Conference on Learning Representations (ICLR), Conference on Artificial Intelligence and Statistics (AISTATS)</p>	