PUBLICATIONS (My students underlined)

Google Scholar profile: `https://scholar.google.com/citations?user=AY6InkoAAAAJ`

- **Citations:** 2600+
- **h-index:** 25

Journal papers

J1. Yahya Sattar and **Samet Oymak**, "*Non-asymptotic and Accurate Learning of Nonlinear Dynamical Systems*", accepted to Journal of Machine Learning Research (JMLR), 2022.

J2. **Samet Oymak**, "*Provable Super-Convergence with a Large Cyclical Learning Rate*," IEEE Signal Processing Letters 2021.

J3. **Samet Oymak** and Necmiye Ozay, "*Revisiting Ho-Kalman based system identification: robustness and finite-sample analysis*", IEEE Trans. on. Automatic Control, 2021.

J4. Nhat Le, A.B. Siddique, Fuad Jamour, **Samet Oymak**, Vagelis Hristidis "*Generating Predictable and Adaptive Dialog Policies in Single- and Multi-domain Goal-oriented Dialog Systems*", IEEE Int. Journal of Semantic Computing (IJSC) 2021.

J5. **Samet Oymak** and Mahdi Soltanolkotabi, "*Learning a deep convolutional neural network via tensor decomposition*," Information & Inference 2021.

J6. Yahya Sattar and **Samet Oymak**, "*Quickly finding the best linear model in high-dimensions*", IEEE Transactions on Signal Processing 2020.

J7. **Samet Oymak** and Mahdi Soltanolkotabi, "*Towards moderate overparameterization: Global convergence guarantees for training neural networks*," IEEE Journal on Selected Areas in Information Theory 2020.

J8. **Samet Oymak**, Mahdi Soltanolkotabi, and Benjamin Recht "*Sharp Time–Data Tradeoffs for Linear Inverse Problems*," IEEE Transactions on Information Theory, June 2018.

J9. **Samet Oymak** and Joel Tropp "*Universality Laws for Randomized Dimension Reduction, with Applications*," Information & Inference, Nov 2017.

J10. **Samet Oymak** and Mahdi Soltanolkotabi "*Fast and Reliable Parameter Estimation from Nonlinear Observations*," SIAM Journal on Optimization, Oct 2017.

J11. **Samet Oymak**, Mahdi Soltanolkotabi, and Benjamin Recht "Isometric sketching of any set via the Restricted Isometry Property," Information & Inference, March 2018.

J12. **Samet Oymak**, Amin Jalali, Maryam Fazel, Yonina Eldar, and Babak Hassibi, "*Simultaneously Structured Models with Application to Sparse and Low-rank Matrices*," IEEE Transactions on Information Theory, 61(5), 2886-2908, 2015.

J13. **Samet Oymak** and Babak Hassibi, "*Sharp MSE Bounds for Proximal Denoising*," Foundations of Computational Mathematics, October 2015.

J14. Kishore Jaganathan, **Samet Oymak**, and Babak Hassibi, "*Sparse Phase Retrieval: Uniqueness Guarantees and Recovery Algorithms*," IEEE Transactions on Signal Processing, May 2017.

Conference papers

C1. Mingchen Li, Xuechen Zhang, Christos Thrampoulidis, Jiasi Chen, **Samet Oymak**, "*AutoBalance: Optimized Loss Functions for Imbalanced Data*," Thirty-fifth Conference on Neural Information Processing Systems (**NeurIPS 2021**).

C2. Yue Sun, Adhyyan Narang, Halil Ibrahim Gulluk, **Samet Oymak**, Maryam Fazel, "*Towards Sample-Efficient Overparameterized Meta-Learning*", **NeurIPS 2021**.

C3. Ganesh R. Kini, Orestis Paraskevas, **Samet Oymak**, Christos Thrampoulidis, "*Label-Imbalanced and Group-Sensitive Classification under Overparameterization*," **NeurIPS 2021**.

C4. **Samet Oymak**, Mingchen Li, Mahdi Soltanolkotabi, "*Generalization Guarantees for Neural Architecture Search with Train-Validation Split*," Int. Conf. on Machine Learning **(ICML)** 2021.

C5. Mohammad Reza Zare Shahneh, **Samet Oymak**, Amr Magdy, "*A-GWR: Fast and Accurate Geospatial Inference via Augmented Geographically Weighted Regression*," full paper at **ACM SIGSPATIAL**, 2021.

C6. Sk Miraj Ahmed, Dripta S. Raychaudhuri, Sujoy Paul, **Samet Oymak**, Amit K. Roy-Chowdhury, "*Unsupervised Multi-source Domain Adaptation Without Access to Source Data*," Conf. on Computer Vision and Pattern Recognition (**CVPR**) 2021, **oral presentation**.

C7. **Samet Oymak** and Talha Cihad Gulcu, "*A Theoretical Characterization of Semi-supervised Learning with Self-training for Gaussian Mixture Models*, The 24th International Conference on Artificial Intelligence and Statistics (**AISTATS**) 2021.

C8. Xiangyu Chang, Yingcong Li, **Samet Oymak**, Christos Thrampoulidis "*Provable Benefits of Overparameterization in Model Compression: From Double Descent to Pruning Neural Networks*", The Thirty-Fifth **AAAI** Conference on Artificial Intelligence 2021.

C9. Yao-Chun Chan, Mingchen Li and **Samet Oymak**, "*On the Marginal Benefit of Active Learning: Does Self-Supervision Eat Its Cake?*", International Conference on Acoustics, Speech, & Signal Processing (IEEE **ICASSP**) 2021.

C10. Halil Ibrahim Gulluk, Yue Sun, **Samet Oymak**, Maryam Fazel, "*Sample Efficient Subspace-based Representations for Nonlinear Meta-Learning*", International Conference on Acoustics, Speech, & Signal Processing (IEEE **ICASSP**) 2021.

C11. Nhat Le, A.B. Siddique, Fuad Jamour, **Samet Oymak**, Vagelis Hristidis "*Predictable and Adaptive Goal-oriented Dialog Policy Generation*", IEEE International Conference of Semantic Computing (ICSC) 2021 **(Best Student Paper award)**.

C12. Christos Thrampoulidis, **Samet Oymak**, Mahdi Soltanolkotabi, "*Theoretical Insights Into Multiclass Classification: A High-dimensional Asymptotic View*," Conference on Neural Information Processing Systems (**NeurIPS**) 2020.

C13. Abu Bakar Siddique, **Samet Oymak**, Vagelis Hristidis "Unsupervised Paraphrasing via Deep Reinforcement Learning", ACM Special Interest Group on Knowledge Discovery and Data Mining (**SIGKDD**) 2020.

C14. Yue Sun, **Samet Oymak**, and Maryam Fazel "Finite Sample System Identification: Optimal Rates and the Role of Regularization", Learning for Dynamics and Control (**L4DC**) 2020.

C15. Mingchen Li, Mahdi Soltanolkotabi, **Samet Oymak**, "*Gradient Descent is Provably Robust to Label Noise for Overparameterized Neural Networks*," Artificial Intelligence and Stats (**AISTATS**) 2020.

C16. Ahmet Demirkaya, Jiasi Chen and **Samet Oymak**, "*Exploring the Role of Loss Functions in Multiclass Classification*", Conference on Information Sciences and Systems (CISS) 2020.

C17. Yahya Sattar and **Samet Oymak**, "*A Simple Framework for Learning Stabilizable Systems*", IEEE Int. Workshop on Computational Advances in Multi-Sensor Adaptive Processing (CAMSAP) 2019.

C18. Hisham Alhulayyil, Kittipat Apicharttrisorn, Jiasi Chen, Karthik Sundaresan, **Samet Oymak** and Srikanth Krishnamurthy "WOLT: Auto-Configuration of Integrated Enterprise PLC-WiFi Networks", International Conference on Distributed Computing Systems (**ICDCS**) 2020.

C19. Zachary Zimmerman, Nader Shakibay Senobari, Gareth Funning, Evangelos Papalexakis, **Samet Oymak**, Philip Brisk, and Eamonn Keogh, "*Matrix Profile XVIII: Time Series Mining in the Face of Fast Moving Streams using a Learned Approximate Matrix Profile*," IEEE International Conference on Data Mining (**ICDM**), long paper, 2019.

C20. **Samet Oymak**, Zalan Fabian, Mingchen Li, Mahdi Soltanolkotabi, "*Generalization, Adaptation and Low-Rank Representation in Neural Networks" ASILOMAR Conference on Signals, Systems, and Computers, 2019.*

C21. ***Samet Oymak****, Jiasi Chen, and Mehrdad Mahdavi,* "Learning Feature Nonlinearities with Non-Convex Regularized Binned Regression*," IEEE Int. Symp. on Info. Theory (ISIT) 2019.*

C22. ***Samet Oymak*** *and Salman Asif,* "Exactly decoding a vector through ReLU activation*", International Conference on Acoustics, Speech, & Signal Processing (IEEE* ***ICASSP****), 2019.*

C23. ***Samet Oymak****,* "Overparameterized Nonlinear Optimization with Applications to Neural Nets*," Sampling Theory and Applications (SampTA) 2019, invited paper.*

C24. ***Samet Oymak*** *and Necmiye Ozay,* "Non-asymptotic Identification of LTI Systems from a Single Trajectory*," Americal Control Conference (ACC) 2019.*

C25. ***Samet Oymak*** *and Mahdi Soltanolkotabi,* "Overparameterized Nonlinear Learning: Gradient Descent Takes the Shortest Path?*," International Conf. on Machine Learning (****ICML****) 2019.*

C26. ***Samet Oymak****,* "Stochastic Gradient Descent Learns State Equations with Nonlinear Activations*," Conference on Learning Theory (****COLT****) 2019.*

C27. ***Samet Oymak****,* "Learning Compact Neural Networks with Regularization*," International Conference on Machine Learning (****ICML****), 2018.*

C28. ***Samet Oymak****, Christos Thrampoulidis and Babak Hassibi,* "Near-Optimal Sample Complexity Bounds for Circulant Binary Embedding*," International Conference on Acoustics, Speech, & Signal Processing (IEEE* ***ICASSP****), 2017 Special Session.*

C29. *Christos Thrampoulidis,* ***Samet Oymak****, and Babak Hassibi, "Regularized linear regression: A precise analysis of the estimation error," Proc. of the Conf. on Learning Theory (****COLT****), 2015.*

C30. ***Samet Oymak*** *and Babak Hassibi,* "The proportional mean decomposition: A bridge between the Gaussian and Bernoulli ensembles*," International Conference on Acoustics, Speech, & Signal Processing (IEEE* ***ICASSP****), 2015.*

C31. *Xinghao Pan, Dimitris Papailiopoulos,* ***Samet Oymak****, Benjamin Recht, Kannan Ramchandran, Michael I. Jordan, "Parallel Correlation Clustering on Big Graphs", Neural Information Processing Systems (****NeurIPS****) 2015.*

C32. *Ramya Vinayak Korlakai,* ***Samet Oymak****, and Babak Hassibi,* "Graph Clustering With Missing Data: Convex Algorithms and Analysis*," Neural Information Processing Systems (****NeurIPS****) 2014.*

C33. ***Samet Oymak*** *and Babak Hassibi,* "A Case for Orthogonal Measurements in Linear Inverse Problems*," Int. Symp. on Info. Theory (IEEE ISIT) 2014.*

C34. *Christos Thrampoulidis,* ***Samet Oymak****, and Babak Hassibi,* "Simple Error Bounds for Regularized Noisy Linear Inverse Problems*," Int. Symp. on Info. Theory (IEEE ISIT) 2014.*

C35. *Ramya Vinayak Korlakai**, ***Samet Oymak****, *and Babak Hassibi,* "Sharp Performance Bounds for Graph Clustering via Convex Optimization*," International Conference on Acoustics, Speech, & Signal Processing (IEEE* ***ICASSP****), 2014, (* equal contribution).*

C36. ***Samet Oymak****, Amin Jalali, Maryam Fazel, and Babak Hassibi,* "Noisy Estimation of Simultaneously Structured Models: Limitations of Convex Relaxation*," 52nd IEEE Conference on Decision and Control (CDC 2013).*

C37. ***Samet Oymak****, Christos Thrampoulidis, and Babak Hassibi,* "The Squared-Error of Generalized LASSO: A Precise Analysis*," 51st Annual Allerton Conference on Communication, Control and Computing, 2013, extended paper at arXiv:1311.0830.*

C38. *Kishore Jaganathan,* ***Samet Oymak****, and Babak Hassibi,* "Sparse Phase Retrieval: Convex Algorithms and Limitations*," Int. Symp. on Info. Theory (IEEE ISIT) 2013.*

C39. ***Samet Oymak*** *and Babak Hassibi,* "On a Relation between the Minimax Risk and the Phase Transitions of Compressed Recovery*," 50th Annual Allerton Conference on Communication, Control and Computing, 2012.*

C40. *Kishore Jaganathan,* ***Samet Oymak****, and Babak Hassibi, "On Robust Phase Retrieval for Sparse Signals," 50th Annual Allerton Conference on Communication, Control and Computing, 2012.*

C41. ***Samet Oymak****, Amin Khajehnejad and Babak Hassibi,* "Recovery Threshold for Optimal Weight ℓ_1 Minimization*," International Symposium on Information Theory (IEEE ISIT) 2012.*

C42. *Kishore Jaganathan,* ***Samet Oymak****, and Babak Hassibi,* "Recovery of Sparse 1-D Signals from the Magnitudes of their Fourier Transform*," Int. Symposium on Info. Theory (IEEE ISIT) 2012.*

C43. *Kishore Jaganathan,* ***Samet Oymak****, and Babak Hassibi,* "Phase Retrieval for Sparse Signals Using Rank Minimization*," Int. Conf. on Acoustics, Speech, and Signal Proc. (**ICASSP**), 2012.*

C44. *Cheuk Ting Li,* ***Samet Oymak****, and Babak Hassibi,* "Deterministic Phase Guarantees for Robust Recovery in Incoherent Dictionaries*," International Conference on Acoustics, Speech, and Signal Processing (**ICASSP**), 2012.*

C45. *Anilesh K. Krishnaswamy,* ***Samet Oymak****, and Babak Hassibi,* "A Simpler Approach to Weighted ℓ_1 Minimization*," Int. Conf. on Acoustics, Speech, and Signal Processing (**ICASSP**), 2012.*

C46. ***Samet Oymak****, Karthik Mohan, Maryam Fazel, and Babak Hassibi,* "A Simplified Approach to Recovery Conditions for Low Rank Matrices*," Int. Symp. on Info. Theory (IEEE ISIT) 2011.*

C47. ***Samet Oymak****, Amin Khajehnejad, and Babak Hassibi,* "Subspace Expanders and Matrix Rank Minimization*," International Symposium on Information Theory (IEEE ISIT) 2011.*

C48. ***Samet Oymak*** *and Babak Hassibi,* "Tight Recovery Thresholds and Robustness Analysis for Nuclear Norm Minimization*," International Symposium on Information Theory (IEEE ISIT) 2011.*

C49. *Amin Khajehnejad,* ***Samet Oymak****, and Babak Hassibi,* "Subspace Expanders and Fast Recovery of Low rank Matrices*," International Conference on Sampling Theory and Applications, 2011.*

C50. ***Samet Oymak****, Amin Khajehnejad, and Babak Hassibi,* "Improved Thresholds for Rank Minimization*," International Conf. on Acoustics, Speech, and Signal Processing (**ICASSP**) 2011.*

C51. *Mainak Chowdhury,* ***Samet Oymak****, Amin Khajehnejad, and Babak Hassibi,* "Robustness Analysis of A List Decoding Algorithm For Compressed Sensing*," International Conference on Acoustics, Speech, and Signal Processing (**ICASSP**) 2011.*

C52. ***Samet Oymak****, Amin Khajehnejad, and Babak Hassibi,* "Weighted Compressed Sensing and Rank Minimization*," International Conf. on Acoustics, Speech, and Signal Processing (**ICASSP**) 2011.*

C53. *Xin Liu,* ***Samet Oymak****, Athina Petropulu, and Kapil R. Dandekar* "Collision Resolution Based on Pulse Shape Diversity*," Signal Processing Advances in Wireless Communications (SPAWC), 2009.*

Preprints

P1. Yahya Sattar, Zhe Du, Davoud Ataee Tarzanagh, Necmiye Ozay, Laura Balzano, **Samet Oymak**, "*Identification and Adaptive Control of Markov Jump Systems: Sample Complexity and Regret Bounds*," in submission, 2021.

P2. Yingcong Li, Mingchen Li, Salman Asif, **Samet Oymak**, "*Provable and Efficient Continual Representation Learning*," in submission, 2021.

P3. Yuzhen Qin, Tommaso Menara, **Samet Oymak**, ShiNung Ching, Fabio Pasqualetti, "*Non-Stationary Representation Learning for Sequential Linear Bandits*," in submission, 2021.

P4. Zhe Du, Yahya Sattar, Davoud Ataee Tarzanagh, Laura Balzano, **Samet Oymak**, Necmiye Ozay, "*Certainty Equivalent Quadratic Control for Markov Jump Systems*," arXiv:2105.12358, 2021.

P5. Xuechen Zhang, **Samet Oymak**, Jiasi Chen, "*Post-hoc Models for Inference Performance Estimation*," in submission, 2021.

P6. Mingchen Li, Yahya Sattar, Christos Thrampoulidis, **Samet Oymak**, "*Exploring Optimization and Generalization in Model Pruning*", in submission, 2021.

Peer-reviewed workshops

1. Maryam Shahcheraghi, Trevor Cappon, **Samet Oymak**, Evangelos Papalexakis, Eamonn Keogh, Zachary Zimmerman, Philip Brisk, "*Matrix Profile Index Approximation for Streaming Time Series*", IEEE BigData Workshop on Real-time Stream Analytics, 2021.
2. Yahya Sattar, Zhe Du, Davoud Ataee Tarzanagh, Necmiye Ozay, Laura Balzano, **Samet Oymak**, "*Identification and Adaptive Control of Markov Jump Systems: Sample Complexity and Regret Bounds*," ICML Workshop on Reinforcement Learning Theory, 2021.
3. Yuzhen Qin, Tommaso Menara, **Samet Oymak**, ShiNung Ching, Fabio Pasqualetti, "*Non-Stationary Representation Learning in Sequential Multi-Armed Bandits*," ICML Workshop on Reinforcement Learning Theory, 2021.
4. Ganesh R. Kini, Orestis Paraskevas, **Samet Oymak**, Christos Thrampoulidis, "*Label-Imbalanced and Group-Sensitive Classification under Overparameterization*," ICML Workshop on Overparameterization: Pitfalls & Opportunities, 2021.
5. Xiangyu Chang, Yingcong Li, **Samet Oymak**, Christos Thrampoulidis "*Provable Benefits of Overparameterization in Model Compression: From Double Descent to Pruning Neural Networks*", Workshop on the Theory of Overparameterized Machine Learning, **Contributed Talk (longer presentation)**, 2021.
6. Yue Sun, Halil Ibrahim Gulluk, Adhyyan Narang, **Samet Oymak**, Maryam Fazel, "*Towards Sample-Efficient Overparameterized Meta-Learning*", Workshop on the Theory of Overparameterized Machine Learning, 2021.
7. Ganesh R. Kini, Orestis Paraskevas, **Samet Oymak**, Christos Thrampoulidis, "*Label-Imbalanced and Group-Sensitive Classification under Overparameterization*," Workshop on the Theory of Overparameterized Machine Learning, 2021.
8. Yuan Zhao, Jiasi Chen and **Samet Oymak**, "*On the Role of Dataset Quality and Heterogeneity in Model Confidence*", arXiv:2002.09831, ICML 2020 Workshop on Uncertainty and Robustness in Deep Learning, 2020.
9. Maryam Shahcheraghi, Trevor Cappon, **Samet Oymak**, Evangelos Papalexakis, Eamonn Keogh, Zachary Zimmerman, Philip Brisk, "*Matrix Profile Index Prediction for Streaming Time Series*", NeurIPS Workshop on Machine Learning for Systems, 2020.
10. **Samet Oymak**, Zalan Fabian, Mingchen Li, Mahdi Soltanolkotabi, "*Generalization Guarantees for Neural Networks via Harnessing the Low-rank Structure of the Jacobian*," ICML Workshop on Generalization in Deep Networks, **Oral presentation**, 2019.
11. Amir Taheri, **Samet Oymak**, Kevin Coombes, and Arindam Banerjee, "High Dimensional Data Enrichment: Interpretable, Fast, and Data-Efficient", ICML Workshop on Adaptive and Multitask Learning 2019.

Technical reports

1. **Samet Oymak** and Talha Cihad Gulcu, "*Statistical and Algorithmic Insights for Semi-supervised Learning with Self-training*, arXiv:2006.11006, short version to appear at AISTATS 2021.
2. **Samet Oymak**, Zalan Fabian, Mingchen Li, Mahdi Soltanolkotabi, "*Generalization Guarantees for Neural Networks via Harnessing the Low-rank Structure of the Jacobian*," short version appeared at ICML Workshop on Generalization in Deep Networks 2019.

3. Amir Taheri, **Samet Oymak**, Kevin Coombes, and Arindam Banerjee, "High Dimensional Data Enrichment: Interpretable, Fast, and Data-Efficient", short version appeared at ICML Workshop on Adaptive and Multitask Learning 2019.
4. **Samet Oymak** "*Near-Optimal Sample Complexity Bounds for Circulant Binary Embedding*," `arXiv:1603.03178`, short version published at IEEE ICASSP 2017.
5. **Samet Oymak** and Benjamin Recht "*Near-Optimal Bounds for Binary Embeddings of Arbitrary Sets*," `arXiv:1512.04433`, 2017.
6. **Samet Oymak**, Chris Thrampoulidis, and Babak Hassibi, "*Simple Bounds for Noisy Linear Inverse Problems with Exact Side Info.*," arXiv:1312.0641, related work published at IEEE ISIT 2014.
7. **Samet Oymak** and Babak Hassibi, "*Finding Dense Clusters via Low Rank + Sparse Decomposition*," `arXiv:1104.5186`, related work published at IEEE ICASSP 2014.
8. **Samet Oymak** and Babak Hassibi, "*New Null Space Results and Recovery Thresholds for Matrix Rank Minimization*," `arXiv:1011.6326`, short version published at IEEE ISIT 2011.

Book chapters

1. Christos Thrampoulidis, **Samet Oymak**, and Babak Hassibi. "Recovering Structured Signals in Noise: Least-Squares Meets Compressed Sensing." as a part of "Compressed Sensing and its Applications" Springer 2014.

Patents

1. Guosen Yue, Narayan Prasad, Sampath Rangarajan, **Samet Oymak**. "Low-complexity precoder design for large-scale mimo communication systems." US Patent US9450657B2, Sept. 2016.