

# Alessandro Rudi

---

PROFESSOR OF PRACTICE

**Digital Transformation**

**ALESSANDRO.RUDI@SDABOCCONI.IT**

---

## ARTICLES IN SCHOLARLY JOURNALS

RUDI A., MARTEAU-FEREY U., BACH F.

**Finding global minima via kernel approximations**

Mathematical Programming, 2025, vol.209, pp.703-784

VACHER A., MUZELLEC B., BACH F., VIALARD F., RUDI A.

**Optimal Estimation of Smooth Transport Maps with Kernel SoS**

SIAM Journal on Mathematics of Data Science, 2024, vol.6, no. 2, pp.311-342

AUBIN-FRANKOWSKI P., RUDI A.

**Approximation of optimization problems with constraints through kernel Sum-of-Squares**

Optimization, 2024, pp.1-26

MARTEAU-FEREY U., BACH F., RUDI A.

**Second Order Conditions to Decompose Smooth Functions as Sums of Squares**

Siam Journal on Optimization, 2024, vol.34, no. 1, pp.616-641

BACH F., RUDI A.

**Exponential Convergence of Sum-of-Squares Hierarchies for Trigonometric Polynomials**

Siam Journal on Optimization, 2023, vol.33, no. 3, pp.2137-2159

BROGAT-MOTTE L., RUDI A., BROUARD C., ROUSU J., D'ALCHÉ-BUC F.

**Vector-Valued Least-Squares Regression under Output Regularity Assumptions**

Journal of Machine Learning Research, 2022, vol.23, no. 344, pp.1-50

CILIBERTO C., ROCCHETTO A., RUDI A., WOSSNIG L.

**Statistical limits of supervised quantum learning**

Physical Review A, 2020, vol.102, no. 4

LIN J., RUDI A., ROSASCO L., CEVHER V.

**Optimal rates for spectral algorithms with least-squares regression over Hilbert spaces**

Applied and Computational Harmonic Analysis, 2020, vol.48, no. 3, pp.868-890

CILIBERTO C., RUDI A., ROSASCO L.

**A General Framework for Consistent Structured Prediction with Implicit Loss Embeddings**

Journal of Machine Learning Research, 2020, vol.21, no. 98, pp.1-67

RUDI A., WOSSNIG L., CILIBERTO C., ROCCHETTO A., PONTIL M., SEVERINI S.

### **Approximating Hamiltonian dynamics with the Nyström method**

Quantum, 2020, vol.4, pp.234

LU X., RUDI A., BORGONOVO E., ROSASCO L.

### **Faster Kriging: Facing High-Dimensional Simulators**

Operations Research, 2020, vol.68, no. 1, pp.233–249

RUDI A., DE VITO E., VERRI A., ODOE F.

### **Regularized Kernel Algorithms for Support Estimation**

Frontiers in Applied Mathematics and Statistics, 2017, vol.3, pp.23

RUDI A., ODOE F., DE VITO E.

### **Geometrical and computational aspects of Spectral Support Estimation for novelty detection**

Pattern Recognition Letters, 2014, vol.36, pp.107–116

---

## PROCEEDINGS/PRESENTATIONS

RAJ A., SIMSEKLI U., RUDI A.

### **Efficient Sampling of Stochastic Differential Equations with Positive Semi-Definite Models**

*Advances in Neural Information Processing Systems 36 (NeurIPS 2023) -the Thirty-Seventh Annual Conference on Neural Information Processing Systems - December 10-16, 2023, New Orléans, United States of America*

BEUGNOT G., MAIRAL J., RUDI A.

### **GloptiNets: Scalable Non-Convex Optimization with Certificates**

*Advances in Neural Information Processing Systems 36 (NeurIPS 2023) -the Thirty-Seventh Annual Conference on Neural Information Processing Systems - December 10-16, 2023, New Orléans, United States of America*

BERTHIER E., CARPENTIER J., RUDI A., BACH F.

### **Infinite-Dimensional Sums-of-Squares for Optimal Control**

*Proceedings of the 61st IEEE Conference on Decision and Control - Dec. 6-9 2022, Cancún, Mexico*

CABANNES V., BACH F., PERCHET V., RUDI A.

### **Active Labeling: Streaming Stochastic Gradients**

*NeurIPS 2022 - The Thirty-Sixth Annual Conference on Neural Information Processing Systems, Nov. 28-Dec. 9 2022, New Orléans, United States of America*

CANTELOBRE T., CILIBERTO C., GUEJ B., RUDI A.

### **Measuring dissimilarity with diffeomorphism invariance**

*Proceedings of Machine Learning Research, Volume 162: International Conference on Machine Learning, July 17-23 2022, Baltimore, Maryland, United States of America*

WOODWORTH B., BACH F., RUDI A.

### **Non-Convex Optimization with Certificates and Fast Rates Through Kernel Sums of Squares**

*Proceedings of Machine Learning Research, Volume 178: Conference on Learning Theory, July 2-5 2022, London, Great Britain*

CHATALIC A., SCHREUDER N., ROSASCO L., RUDI A.

### **Nyström Kernel Mean Embeddings**

*Proceedings of Machine Learning Research, Volume 162: International Conference on Machine Learning, July 17-23 2022, Baltimore, Maryland, United States of America*

BEUGNOT G., MAIRAL J., RUDI A.

### **On the Benefits of Large Learning Rates for Kernel Methods**

*Proceedings of Machine Learning Research, Volume 178: Conference on Learning Theory, July 2-5 2022, London, Great Britain*

NOWAK-VILA A., RUDI A., BACH F.

**On the Consistency of Max-Margin Losses**

*Proceedings of Machine Learning Research, Volume 151: International Conference on Artificial Intelligence and Statistics, A Virtual Conference - March 28-30, 2022*

MARTEAU-FEREY U., BACH F., RUDI A.

**Sampling from Arbitrary Functions via PSD Models**

*Proceedings of Machine Learning Research, Volume 151: International Conference on Artificial Intelligence and Statistics, A Virtual Conference - March 28-30, 2022*

BEUGNOT G., MAIRAL J., RUDI A.

**Beyond Tikhonov: faster learning with self-concordant losses, via iterative regularization**

*NeurIPS 2021 · Thirty-Fifth Annual Conference on Neural Information Processing Systems, December 6-14 2021, Virtual Conference*

JÉZÉQUEL R., GAILLARD P., RUDI A.

**Mixability made efficient: Fast online multiclass logistic regression**

*NeurIPS 2021 · Thirty-Fifth Annual Conference on Neural Information Processing Systems, December 6-14 2021, Virtual Conference*

CABANNES V., PILLAUD-VIVIEN L., BACH F., RUDI A.

**Overcoming the curse of dimensionality with Laplacian regularization in semi-supervised learning**

*NeurIPS 2021 · Thirty-Fifth Annual Conference on Neural Information Processing Systems, December 6-14 2021, Virtual Conference*

RUDI A., CILIBERTO C.

**PSD Representations for Effective Probability Models**

*NeurIPS 2021 · Thirty-Fifth Annual Conference on Neural Information Processing Systems, December 6-14 2021, Virtual Conference*

VACHER A., MUZELLEC B., RUDI A., BACH F., VIALARD F.

**A Dimension-free Computational Upper-bound for Smooth Optimal Transport Estimation**

*Proceedings of Machine Learning Research, Volume 134: Conference on Learning Theory, August 15-19 2021, Boulder, Colorado, United States of America*

CABANNES V., BACH F., RUDI A.

**Fast Rates for Structured Prediction**

*Proceedings of Machine Learning Research, Volume 134: Conference on Learning Theory, August 15-19 2021, Boulder, Colorado, United States of America*

CABANNES V., BACH F., RUDI A.

**Disambiguation of Weak Supervision leading to Exponential Convergence rates**

*Proceedings of Machine Learning Research, Volume 139: International Conference on Machine Learning, July 18-24 2021, Virtual Conference*

NOWAK-VILA A., RUDI A., BACH F.

**Max-margin is dead, long live max-margin!**

*The Thirty-Eighth International Conference on Machine Learning - July 18-24 2021, Virtual Conference*

MEANTI G., CARRATINO L., ROSASCO L., RUDI A.

**Kernel Methods Through the Roof: Handling Billions of Points Efficiently**

*NeurIPS 2020 · Thirty-Fourth Annual Conference on Neural Information Processing Systems, Dec. 6-12 2020, Virtual-Only Conference*

MARTEAU-FEREY U., BACH F., RUDI A.

**Non-parametric Models for Non-negative Functions**

*NeurIPS 2020 · Thirty-Fourth Annual Conference on Neural Information Processing Systems, Dec. 6-12 2020, Virtual-Only Conference*

STERGE N., SRIPERUMBUDUR B., ROSASCO L., RUDI A., STOLTZ G.

**Gain with no Pain: Efficiency of Kernel-PCA by Nyström Sampling**

*Proceedings of Machine Learning Research, Volume 108: International Conference on Artificial Intelligence and Statistics, August 26-28, 2020, Online*

PILLAUD-VIVIEN L., BACH F., LELIÈVRE T., RUDI A., STOLTZ G.

**Statistical Estimation of the Poincaré constant and Application to Sampling Multimodal Distributions**

*Proceedings of Machine Learning Research, Volume 108: International Conference on Artificial Intelligence and Statistics, August 26-28, 2020, Online*

NOWAK-VILA A., BACH F., RUDI A.

**Consistent Structured Prediction with Max-Min Margin Markov Networks**

*Proceedings of Machine Learning Research, Volume 119: International Conference on Machine Learning, July 13-18 2020, Virtual*

JÉZÉQUEL R., GAILLARD P., RUDI A.

**Efficient improper learning for online logistic regression**

*Proceedings of Machine Learning Research, Volume 125: Conference on Learning Theory, July 9-12 2020, Online*

CABANNES V., RUDI A., BACH F.

**Structured Prediction with Partial Labelling through the Infimum Loss**

*Proceedings of Machine Learning Research, Volume 119: International Conference on Machine Learning, July 13-18 2020, Virtual*

JÉZÉQUEL R., GAILLARD P., RUDI A.

**Efficient online learning with kernels for adversarial large scale problems**

*Advances in Neural Information Processing Systems 32 (NeurIPS 2019), Dec. 8-14 2019, Vancouver, Canada*

MARTEAU-FEREY U., BACH F., RUDI A.

**Globally Convergent Newton Methods for Ill-conditioned Generalized Self-concordant Losses**

*Advances in Neural Information Processing Systems 32 (NeurIPS 2019), Dec. 8-14 2019, Vancouver, Canada*

CILIBERTO C., BACH F., RUDI A.

**Localized Structured Prediction**

*Advances in Neural Information Processing Systems 32 (NeurIPS 2019), Dec. 8-14 2019, Vancouver, Canada*

ALTSCHULER J., BACH F., RUDI A., NILES-WEED J.

**Massively scalable Sinkhorn distances via the Nyström method**

*Advances in Neural Information Processing Systems 32 (NeurIPS 2019), Dec. 8-14 2019, Vancouver, Canada*

OSTROVSKII D., RUDI A.

**Affine Invariant Covariance Estimation for Heavy-Tailed Distributions**

*Proceedings of Machine Learning Research, Volume 99: Conference on Learning Theory, June 25-28 2019, Phoenix, United States of America*

MARTEAU-FEREY U., OSTROVSKII D., BACH F., RUDI A.

**Beyond Least-Squares: Fast Rates for Regularized Empirical Risk Minimization through Self-Concordance**

*Proceedings of Machine Learning Research, Volume 99: Conference on Learning Theory, June 25-28 2019, Phoenix, United States of America*

NOWAK-VILA A., BACH F., RUDI A.

**Sharp Analysis of Learning with Discrete Losses**

*Proceedings of Machine Learning Research, Volume 89: The 22nd International Conference on Artificial Intelligence and Statistics, April 16-18, 2019, Naha, Okinawa, Japan*

LUISE G., RUDI A., PONTIL M., CILIBERTO C.

**Differential Properties of Sinkhorn Approximation for Learning with Wasserstein Distance**

*Advances in Neural Information Processing Systems 31 (NeurIPS 2018), Dec. 2-8 2018, Montréal, Canada*

PILLAUD-VIVIEN L., RUDI A., BACH F.

**Exponential Convergence of Testing Error for Stochastic Gradient Methods**

*Proceedings of Machine Learning Research, Volume 75: Conference On Learning Theory, July 6-9 2018, Stockholm, Sweden*

CARRATINO L., RUDI A., ROSASCO L.

**Learning with SGD and Random Features**

*Advances in Neural Information Processing Systems 31 (NeurIPS 2018), Dec. 2-8 2018, Montréal, Canada*

RUDI A., CILIBERTO C., MARCONI G., ROSASCO L.

**Manifold Structured Prediction**

*Advances in Neural Information Processing Systems 31 (NeurIPS 2018), Dec. 2-8 2018, Montréal, Canada*

RUDI A., CALANDRIELLO D., CARRATINO L., ROSASCO L.

**On Fast Leverage Score Sampling and Optimal Learning**

*Advances in Neural Information Processing Systems 31 (NeurIPS 2018), Dec. 2-8 2018, Montréal, Canada*

PILLAUD-VIVIEN L., RUDI A., BACH F.

**Statistical Optimality of Stochastic Gradient Descent on Hard Learning Problems through Multiple Passes**

*Advances in Neural Information Processing Systems 31 (NeurIPS 2018), Dec. 2-8 2018, Montréal, Canada*

CILIBERTO C., RUDI A., ROSASCO L., PONTIL M.

**Consistent Multitask Learning with Nonlinear Output Relations**

*Advances in Neural Information Processing Systems 30 (NIPS 2017), Dec. 4-9 2017, Long Beach, CA, United States of America*

RUDI A., CARRATINO L., ROSASCO L.

**FALKON: An Optimal Large Scale Kernel Method**

*Advances in Neural Information Processing Systems 30 (NIPS 2017), Dec. 4-9 2017, Long Beach, CA, United States of America*

RUDI A., ROSASCO L.

**Generalization Properties of Learning with Random Features**

*Advances in Neural Information Processing Systems 30 (NIPS 2017), Dec. 4-9 2017, Long Beach, CA, United States of America*

CILIBERTO C., ROSASCO L., RUDI A.

**A Consistent Regularization Approach for Structured Prediction**

*Advances in Neural Information Processing Systems 29 (NIPS 2016), Dec. 5-10 2016, Barcelona, Spain*

CAMORIANO R., ANGLES T., RUDI A., ROSASCO L.

**NYTRO: When Subsampling Meets Early Stopping**

*Proceedings of Machine Learning Research, Volume 51: International Conference on Artificial Intelligence and Statistics, May 9-11, 2016, Cadiz, Spain*

RUDI A., CAMORIANO R., ROSASCO L.

**Less is More: Nyström Computational Regularization**

*Advances in Neural Information Processing Systems 28 (NIPS 2015), Dec. 7-10 2015, Montréal, Canada*

RUDI A., CANAS G. D., ROSASCO L.

**On the Sample Complexity of Subspace Learning**

*Advances in Neural Information Processing Systems 26 (NIPS 2013), Dec. 5-8 2013, Lake Tahoe, Nevada, United States of America*

PIRRI F., PIZZOLI M., RUDI A.

**A general method for the point of regard estimation in 3D space**

*2011 IEEE Conference on Computer Vision and Pattern Recognition (CVPR), June 20-25, 2011, Colorado Springs, United States of America*

---