

FENG Yunlong

Ph.D., *Assistant Professor*

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Department of Mathematics and Statistics

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Current Employment

August 2017–Present: (Tenure-track) Assistant Professor
Department of Mathematics and Statistics, SUNY Albany, NY, USA

Employment History

October 2013–July 2017: Postdoc Researcher
KU Leuven, Leuven, Belgium
Supervisor: Professor Johan A.K. Suykens

October 2012–September 2013: Postdoc Researcher
City University of Hong Kong, Hong Kong, China
Supervisor: Professor Ding-Xuan Zhou

Education

Ph.D. in Mathematics, October 2012
City University of Hong Kong, Hong Kong, China
(Jointly awarded with the University of Science and Technology of China, Hefei, China)
Thesis Title: Kernel-based algorithms in statistical learning theory
Supervisor: Professor Ding-Xuan Zhou

B.Sc. in Mathematics, July 2007
Nankai University, Tianjin, China

Research Interests

Machine learning, statistical learning theory

Publications

1. K. Tubbesing, N. Moskwa, T.C. Khoo, D. A. Nelson, A. Sharikova, Y. Feng, M. Larsen, and A. Khmaladze. Raman microspectroscopy fingerprinting of live unlabeled organoids. *Cellular & Molecular Biology Letters*, 27:53, 2022.
2. S. Huang, Y. Feng, and Q. Wu. Fast rates of Gaussian empirical gain maximization with heavy-tailed noise. *TNNLS*, in press, 2022.

3. Y. Feng and Q. Wu. A statistical learning assessment of Huber regression. *Journal of Approximation Theory*, 273:105660, 2022.
4. S. Huang, Y. Feng, and Q. Wu. Learning theory of minimum error entropy under weak moment conditions. *Analysis and Applications*, 20(1): 121-139, 2022.
5. Y. Feng and Q. Wu. A framework of learning through empirical gain maximization. *Neural Computation*, 33(6):1656-1697, 2021.
6. Y. Feng. New insights into learning with correntropy based regression. *Neural Computation*, 33(1):157-173, 2020.
7. Y. Feng and Q. Wu. Learning under $(1 + \epsilon)$ -moment conditions. *Applied and Computational Harmonic Analysis*, 49(2):495-520, 2020.
8. Y. Feng, J. Fan, and J. Suykens. A statistical learning approach to modal regression. *Journal of Machine Learning Research*, 21:1-35, 2020.
9. Y. Feng and Y. Ying. Learning with correntropy-induced losses for regression with mixture of symmetric stable noise. *Applied and Computational Harmonic Analysis*, 48(2): 795-810, 2020.
10. L. Shi, X. Huang, Y. Feng, and J. Suykens. Sparse kernel regression with coefficient-based ℓ_q -regularization. *Journal of Machine Learning Research*, 20:1-44, 2019.
11. H. Hang, I. Steinwart, Y. Feng, and J. Suykens. Kernel density estimation for dynamical systems. *Journal of Machine Learning Research*, 19:1260-1308, 2018.
12. H. Xiao, J. Gao, Q. Li, F. Ma, L. Su, Y. Feng, and A. Zhang. Towards confidence interval estimation in truth discovery. *IEEE Transactions on Knowledge and Data Engineering*, 31(3):575-588, 2018.
13. Y. Yang, Y. Feng, and J. Suykens. Correntropy based matrix completion. *Entropy*, 20(3), 171, 2018.
14. Z. Karevan, Y. Feng, and J. Suykens. Moving least squares support vector machines for weather temperature prediction. *ESANN*, 2017.
15. H. Hang, Y. Feng, I. Steinwart, and J. Suykens. Learning theory estimates with observations from general stationary stochastic processes. *Neural Computation*, 28(12):2853-2889, 2016.
16. Y. Feng, Y. Yang, X. Huang, S. Mehrkanoon, and J. Suykens. Robust support vector machines for classification with non-convex and smooth losses, *Neural Computation*, 28(6):1217-1247, 2016.
17. Y. Feng, Y. Yang, and J. Suykens. Robust gradient learning with applications. *IEEE Transactions on Neural Networks and Learning Systems*, 27(4):822-835, 2016.
18. Y. Feng, S.-G. Lv, H. Hang, and J. Suykens. Kernelized elastic-net regularization: Generalization bounds and sparse recovery. *Neural Computation*, 28:525-562, 2016.
19. Y. Yang, Y. Feng, X. Huang, and J. Suykens. Rank-1 tensor properties with applications to a class of tensor optimization problems. *SIAM Journal on Optimization*, 26(1):171-196, 2016.

20. Y. Yang, Y. Feng, and J. Suykens. Robust matrix completion through nonconvex approaches and efficient algorithms. In T. Bouwmans, N. S. Aybat, and E. Zahzah (Ed.) *Handbook of Robust Low-Rank and Sparse Matrix Decomposition: Applications in Image and Video Processing*, CRC Press, 2016.
21. H. Xiao, J. Gao, Q. Li, F. Ma, L. Su, Y. Feng, and A. Zhang. Towards confidence in the truth: A bootstrapping based truth discovery approach. In *SIGKDD*, 2016.
22. Y. Feng, X. Huang, L. Shi, Y. Yang, and J. Suykens. Learning with the maximum correntropy criterion induced losses for regression. *Journal of Machine Learning Research*, 16:993-1034, 2015.
23. Y. Yang, Y. Feng, and J. Suykens. A rank-one tensor updating algorithm for tensor completion. *IEEE Signal Processing Letters*, 22(10):1633-1637, 2015.
24. Y. Yang, Y. Feng, and J. Suykens. Robust low rank tensor recovery with regularized re-descending M-estimator. *IEEE Transactions on Neural Networks and Learning Systems*, 27(9):1933-1946, 2016.
25. S.-G. Lv and Y. Feng. Consistency of coefficient-based spectral clustering with ℓ^1 -regularizer. *Mathematical and Computer Modelling*, 57(3-4):469-482, 2013.
26. Y. Zhao and Y. Feng. Learning performance of elastic net regularization. *Mathematical and Computer Modelling*, 57(5):1395-1407, 2013.
27. S.-G. Lv and Y. Feng. Semi-supervised learning with the help of Parzen windows. *Journal of Mathematical Analysis and Applications*, 386(1):205-212, 2012.
28. Y. Feng. Least-squares regularized regression with dependent samples and q -penalty. *Applicable Analysis*, 91(5):979-991, 2012.
29. S.-G. Lv and Y. Feng. Integral operator approach to learning theory with unbounded sampling. *Complex Analysis and Operator Theory*, 6(3):533-548, 2011.
30. L. Shi, Y. Feng, and D.-X. Zhou. Concentration estimates for learning with ℓ^1 -regularizer and data dependent hypothesis spaces. *Applied and Computational Harmonic Analysis*, 31(2):286-302, 2011.
31. Y. Feng and S.-G. Lv. Unified approach to coefficient-based regularized regression. *Computers & Mathematics with Applications*, 62(1):506-515, 2011.

Preprints or Submitted Manuscripts

1. R. Wang and Y. Feng. Asymmetric Gaussian empirical gain maximization approach to expectile regression. *Preprint*, 2022.
2. R. Wang, C.M. Henneberry, A. Lemus, Y. Ying, Y. Feng, and V. Valm. Sparse learning for unmixing biological fluorescence image data with overlapping emission spectra. *Preprint*, 2022.
3. Y. Yang and Y. Feng. Half-quadratic alternating direction method of multipliers for robust orthogonal tensor approximation. *Submitted*, 2022.
4. Y. Feng and Q. Wu. Tikhonov regularization for Gaussian empirical gain maximization in RKHS is consistent. *Submitted*, 2021.

Instructed Courses at SUNY Albany

- AMAT 101 Algebra and Calculus I
- AMAT 108 Elementary Statistics
- AMAT 112 Calculus I
- AMAT 214 Calculus of Several Variables
- AMAT 363 Statistics
- AMAT 367 Discrete Probability
- AMAT 465/565 Applied Statistics
- AMAT 591 Optimization Methods and Nonlinear Programming
- AMAT 810 Topics in Analysis
- AMAT 899 Doctoral Dissertation

Course Summary and Teaching Evaluations

| Term | Course Number | Students Enrolled | Response Rate ¹ | Course Overall ² | Instructor Overall |
|-------------|---------------|-------------------|----------------------------|-----------------------------|--------------------|
| Fall 2017 | AMAT 101 | 36 | 72% | 3.48 | 3.81 |
| Spring 2018 | AMAT 108 | 39 | 49% | 3.89** | 4.05** |
| Spring 2018 | AMAT 591 | 19 | 68% | 4.75** | 4.85** |
| Fall 2018 | AMAT 214 | 28 | 61% | 4.00** | 4.53** |
| Fall 2018 | AMAT 810 | 13 | 85% | 4.27** | 4.36** |
| Spring 2019 | AMAT 214 | 37 | 57% | 4.81** | 4.85** |
| Spring 2019 | AMAT 591 | 36 | 58% | 3.70 | 4.10 |
| Fall 2019 | AMAT 465/565 | 34 | 50% | 4.00** | 4.35** |
| Fall 2019 | AMAT 112 | 35 | 46% | 3.94** | 4.13** |
| Spring 2020 | AMAT 591 | 12 | 83% | 4.70** | 4.80** |
| Spring 2020 | AMAT 363 | 38 | 45% | 4.24** | 4.76** |
| Fall 2020 | AMAT 591 | 26 | 62% | 4.44** | 4.38 |
| Fall 2020 | AMAT 363 | 26 | 46% | 4.25** | 4.50** |
| Spring 2021 | AMAT 591 | 5 | 40% | 3.00 | 4.50** |
| Spring 2021 | AMAT 363 | 34 | 47% | 4.13** | 4.50** |
| Summer 2021 | AMAT 363 | 30 | 40% | 4.58** | 4.83** |
| Fall 2021 | AMAT 591 | 4 | 25% | 5.00** | 5.00** |
| Fall 2021 | AMAT 363 | 16 | 31% | 4.40** | 4.20** |
| Spring 2022 | AMAT 363 | 26 | 38% | 4.40** | 4.70** |
| Spring 2022 | AMAT 591 | 8 | 63% | 4.80** | 4.80** |

¹Response rate is rounded to the nearest whole percentage.

²“Course Overall” and “Instructor Overall” scores are mean average ratings on 5-point Likert Scales.

** indicates the score is above the department average.

External Grants and Awards

1. Co-I. NIH: R01DE031213
 - Project: Biofilm Spatial Structure in the Transition from Health to Periodontal Disease
 - Program: NIH R01
 - PI: Dr. Alex Valm from SUNY Albany
 - Total amount: \$2,324,968
 - Timeline: August 1, 2022–July 31, 2027
2. Co-PI. SUNY-IBM AI Collaborative Project
 - Project: FRAPP: Fair, Robust, And Privacy-Preserving Machine Learning Algorithms
 - Program: SUNY-IBM AI Research Alliance
 - PI: Dr. Yiming Ying from SUNY Albany. Co-PI: Dr. Yunlong Feng and Dr. Penghang Yin from SUNY Albany
 - Total amount: \$100,000
 - Timeline: October 15, 2021–October 14, 2022
3. PI. NSF-DMS Award 2111080
 - Project: Collaborative Research: Mathematical Foundation of Learning with Information Theoretic Criteria from Non-Gaussian Data
 - Program: Computational Mathematics, Division of Mathematical Sciences from *National Science Foundation* (NSF)
 - Collaborative PI: Dr. Qiang Wu from the Middle Tennessee State University, Co-PI: Dr. Alex Valm from SUNY Albany
 - Total amount: \$274,999, with \$160,000 for SUNY Albany
 - Timeline: July 1, 2021–June 30, 2024
 - Lead institution: SUNY Albany
4. PI. The 2019 *Ralph E. Powe Junior Faculty Enhancement Award* by Oak Ridge Associated Universities. Total amount: \$10,000. Timeline: June 1, 2019–May 31, 2020
5. PI. Simons Foundation Award 572064
 - Project: Robust Statistical Learning from Noisy Data
 - Program: Mathematics and Physical Sciences–Collaboration Grants for Mathematicians from *Simons Foundation*
 - Total amount: \$42,000
 - Timeline: September 1, 2018–August 31, 2023
 - Remark: Terminated on August 31, 2021 due to the award of NSF DMS-2111080

Internal Grants and Awards

1. Travel award from the College of Arts and Sciences, SUNY Albany, Spring 2020. Total amount: \$800

2. Co-PI. Project: Novel Technology for Mapping the Spatial Structure of the COVID-19 Salivary Microbiome
 - Program: UAlbany COVID-19 Seeding Fund
 - PI: Dr. Alex Valm from the Department of Biology, SUNY Albany
 - Timeline: April 2020–July 2020
 - Total amount: \$5,000 with \$2,500 for Dr. Yunlong Feng

Students Supervision

- Ruogu Wang, Ph.D. student at the Department of Mathematics and Statistics, SUNY Albany, January 2018–present
Project: A Study of Robust and Sparse Regression and Its Applications
Remark: Ruogu Wang is also partially supported by an NSF grant of Dr. Yiming Ying
- A high school student at the Shaker High School, Latham, New York, December 2017–December, 2019
Project: Machine Learning Approach for Data Analytics in Robotics Competitions
- Putney Shane, master’s student at the Department of Mathematics and Statistics, SUNY Albany, April 2019–April 2020
Project: A Simultaneous Approach to Robust Classification and Noisy Label Detection
- Haoqi Wang, undergraduate student at the Department of Mathematics and Statistics, SUNY Albany, October 2018–September 2019
Project: A Practical Study of Modal Regression in Machine Learning

Professional Service

- Associate Editor for *Mathematical Foundations of Computing*, 2018–present
- Guest Editor for the special issue “Mathematics of Data Science” of the journal of *Analysis and Applications*
- Reviewer for Simons Foundation, Program: Collaboration Grants for Mathematicians, 2020 (reviewed 13 proposals)
- Reviewer for the Ralph E. Powe Junior Faculty Award, Oak Ridge Associated Universities (ORAU), 2021 (reviewed 3 proposals)
- Reviewer for Austrian Science Fund (FWF), 2021
- Reviewer for Research Grants Council (RGC) in Hong Kong, 2018–2022 (reviewed 15 proposals in total)
- Reviewer for conferences: ICML, NeurIPS, SODA, ICLR, AISTATS, IJCAI, AAAI, SDM, UAI, ICDM, IEEE BigData
- Book proposal reviewer for the Cambridge University Press
- Book reviewer for the Cambridge University Press and Bentham Science Publishers
- Reviewer for journals: *Journal of Machine Learning Research*, *Applied and Computational Harmonic Analysis*, *Machine Learning Journal*, *Information and Inference*:

A Journal of the IMA, Journal of Econometrics, SIAM Journal on Control and Optimization, Inverse Problems, Scandinavian Journal of Statistics, Neural Computation, Theoretical Computer Science, Journal of Complexity, Computational Statistics & Data Analysis, IEEE Transactions on Knowledge and Data Engineering, IEEE Transactions on Knowledge Discovery from Data, IEEE Transactions on Neural Networks and Learning Systems, IEEE Transactions on Services Computing, IEEE Transactions on Cybernetics, IEEE Signal Processing Letters, ACM Transactions on Intelligent Systems and Technology, Analysis and Applications, Journal of Mathematical Analysis and Applications, Signal Processing, Communications in Pure and Applied Analysis, Applied Mathematical Modelling, Neurocomputing, Entropy Journal, IJWMIP, International Journal of Systems Science, Mathematical Reviews, Science China Information Science, Symmetry Journal, International Journal of Mathematics and Computer Science, Mathematical Foundations of Computing, Big Data and Cognitive Computing, Mathematics, Applied Mathematics-A Journal of Chinese Universities, Frontiers in Applied Mathematics and Statistics, International Journal of Disaster Risk Reduction

- Organizer of the invited session “Recent Advances in Learning Theory and Applications” for the conference “The 3rd International Conference on Econometrics and Statistics”, June 25–27, 2019, National Chung Hsing University, Taichung, Taiwan
- Organizer of the invited session “Challenges and Developments in Analyzing Complex Data” for the conference “The 2020 ICASA Applied Statistics Symposium”, May 17–20, 2020, The Westin Galleria Houston, Houston, Texas, USA (canceled due to COVID-19)
- Organizer of the invited session “Statistical Learning from Non-standard Data” for the conference “The 4th International Conference on Econometrics and Statistics”, July 20–22, 2020, Yonsei University, South Korea (canceled due to COVID-19)

Internal Service

- Member of the Hiring Committee of the Department of Mathematics and Statistics, SUNY Albany, Fall 2022
- Representative of the Department of Mathematics and Statistics to Accepted Student Open House of SUNY Albany, March 26, 2022
- Ambassador of the Department of Mathematics and Statistics to the Sustainability Outreach Committee, SUNY Albany, March 2022–present
- Chair of the Colloquium Committee, Department of Mathematics and Statistics, SUNY Albany, September 2021–present
- Member of the Undergraduate Committee, Department of Mathematics and Statistics, SUNY Albany, September 2021–present
- Representative of the Department of Mathematics and Statistics to The RNA Institute Open House, SUNY Albany, September 23, 2021
- Review Committee of the Distinguished Doctoral Dissertation Award, College of Arts and Science, SUNY Albany, Spring 2021 (reviewed 5 doctoral dissertations)

- Member of the Council on Research (CoR) FRAP A Review Committee (University-wide Committee), SUNY Albany, Fall 2019 (reviewed 2 FRAP-A proposals)
- Reviewer for internal research grant applications “Faculty Research Award Program Category A” (FRAP-A) and “Faculty Research Award Program Category B” (FRAP-B) as a member of the CAS FRAP Review Committee (College-wide Committee), SUNY Albany, Fall 2019 (reviewed 3 FRAP-A proposals), Spring 2020 (reviewed 4 FRAP-B proposals)
- Representative of the Department of Mathematics and Statistics to the College of Arts & Sciences Faculty Council at SUNY Albany, September 2019–May 2021
- Member of the Oral Exam Committee of Zhenhuan Yang, Department of Mathematics and Statistics, SUNY Albany, December 2019
- Member of the Faculty Development Committee at the College of Arts and Sciences, SUNY Albany, September 2019–May 2021
- Member of the Graduate Committee, Department of Mathematics and Statistics, SUNY Albany, 2019–2020
- Member of the Colloquium Committee, Department of Mathematics and Statistics, SUNY Albany, Spring 2018–present
- Member of the Oral Exam Committee of Michael Natole, Department of Mathematics and Statistics, SUNY Albany, August 2018
- Mentor of Ph.D. students, Milo Tallon and Ruogu Wang, from the Department of Mathematics and Statistics, SUNY Albany, August 2018–present
- Member of the Thesis Committee of Ziqiang Lin at the Department of Mathematics and Statistics, SUNY Albany, 2018
- Advisor of undergraduate students at the Department of Mathematics and Statistics, SUNY Albany, September 2018–present

Advisees: Max Griffin Agrest, Alexandra Alliegro, Katherine Austin, Sophia Rose Fumo, Bryce A. Harding, Hannah Jessie Nicklas, Olivia Santosuosso, Vincent Paras-candolo, Younghwan Son, Tiguida Toure, Shawn Wilson, Anki Wu

Talks and Visits

- June 5, 2022. Oral presentation at the 5th International Conference on Econometrics and Statistics (EcoSta 2022), Ryukoku University, Kyoto, Japan (online talk through Zoom)
- January 18, 2022. Talk at the Department of Mathematics and Statistics, Georgia State University, Atlanta, Georgia, USA (online talk through Webex)
- December 18–20, 2021. Oral presentation at the 14th International Conference of the ERCIM WG on Computational and Methodological Statistics (CMStatistics 2021), King’s College London, UK (online talk through Zoom)
- September 22, 2021. Talk at the Computational Analysis Seminar at the Department of Mathematics, Vanderbilt University, Nashville, Tennessee, USA (online talk through Zoom)

- May 17–20, 2020. Oral presentation at the 2020 ICSA Applied Statistics Symposium, The Westin Galleria Houston, Houston, Texas, USA (canceled due to COVID-19)
- May 11–14, 2020. Oral presentation at the International Conference on Approximation Theory and Beyond, Vanderbilt University, Nashville, Tennessee, USA (canceled due to COVID-19)
- April 23, 2020. Talk at the Department of Mathematics, Syracuse University, New York, USA (canceled due to COVID-19)
- March 18, 2020. Talk at the Department of Statistics, University of Nebraska-Lincoln, Lincoln, Nebraska, USA (canceled due to COVID-19)
- October 21, 2019. Talk at the Analysis and Data Science Seminar at the Department of Mathematics and Statistics, SUNY Albany, New York, USA
- July 4, 2019. Talk at the College of Mathematics and Information Science, Guangxi University, Nanning, China
- June 25–27, 2019. Oral presentation at the Third International Conference on Econometrics and Statistics, National Chung Hsing University, Taichung, Taiwan
- June 19–23, 2019. Oral presentation at the Third International Conference on Mathematics of Data Science, City University of Hong Kong, Hong Kong, China
- June 15–17, 2019. Oral presentation at the Workshop on Learning Theory and Data Science, Jinan University, Shandong, China
- May 15–17, 2019. Oral presentation at the 33rd New England Statistics Symposium, Hartford, Connecticut, USA
- November 2–4, 2018. Oral presentation at the 2nd International Conference on Mathematics of Data Science, Old Dominion University in Norfolk, Virginia, USA
- June 19, 2018–July 21, 2018. Oral presentation at the 2nd International Conference on Econometrics and Statistics, City University of Hong Kong, Hong Kong, China
- June 14, 2018. Talk at the Institute of Statistics, Nankai University, Tianjin, China
- May 28, 2018. Talk at the College of Mathematics and Information Science, Guangxi University, Nanning, China
- May 14–18, 2018. Oral presentation at the 7th Internal Conference on Computational Harmonic Analysis, Vanderbilt University, Nashville, Tennessee, USA
- April 20, 2018–May 21, 2018. Oral presentation at the 7th Annual Conference of the Upstate Chapters of the American Statistical Association, University of Rochester, Rochester, New York, USA
- March 1, 2017. Talk at the Department of Mathematics and Statistics, The State University of New York at Albany, New York, USA
- October 17, 2016. Talk at the Max Planck Institute for Intelligent Systems, Tübingen, Germany
- April 24–26, 2015. Oral presentation at the 34th Benelux Meeting on Systems and Control, Lommel, Belgium

- December 15–29, 2014. Visiting Scholar at the Department of Automation, Tsinghua University, Beijing, China
- December 8–12, 2014. Oral presentation at the International Conference on Learning and Approximation, Fudan University, Shanghai, China
- July 14–15, 2014. Oral presentation at the Workshop on Data-driven Modeling Methods and Applications, KU Leuven, Leuven, Belgium
- July 9–27, 2012. Fully funded participant of the Graduate Summer School: Deep Learning, Feature Learning, Institute for Pure & Applied Mathematics, University of California, Los Angeles, California, USA
- June 28, 2012–July 3, 2012. Oral presentation at the 8th International Conference on Mathematical Methods for Curves and Surfaces, University of Oslo, Oslo, Norway
- May 23–27, 2011. Oral presentation at the 4th International Conference on Computational Harmonic Analysis, City University of Hong Kong, Hong Kong, China