

PROMOTION RECOMMENDATION  
The University of Michigan  
College of Literature, Science, and the Arts

Kean Ming Tan, assistant professor of statistics, College of Literature, Science, and the Arts, is recommended for promotion to associate professor of statistics, with tenure, College of Literature, Science, and the Arts.

Academic Degrees:

Ph.D.	2015	University of Washington
M.S.	2011	Purdue University
B.S.	2011	Purdue University

Professional Record:

2019-present	Assistant Professor, Department of Statistics, University of Michigan
2017-2019	Neyman Visiting Assistant Professor, University of Minnesota

Summary of Evaluation:

Teaching: Professor Tan has taught two undergraduate courses at Michigan (Stats 306 and 412) and two graduate courses (Stats 507 and 511). All of them are key courses in our programs. Professor Tan's evaluations in all courses are consistently well above department average. He is popular with undergraduates and generates long waitlists. He develops excellent teaching materials and invests extensive effort into making his courses accessible to students from a variety of backgrounds. Professor Tan is currently supervising six Ph.D. students, publishing multiple papers with them, and has served on committees of ten others. He has also supervised research projects of nine master's students and five undergraduates, as well as an undergraduate honors thesis. This is an outstanding mentoring record for faculty at any career stage, and well above expectations for junior faculty.

Research: Professor Tan works on large and complex data problems, an overarching theme in modern statistics. His expertise is at the interface of statistics and optimization, which allows him to make unique contributions. He has a strong publication record, including many papers in top statistics journals, and an outstanding funding record, including a NSF CAREER award. He has worked on several distinct and important topics, including graphical models and other unsupervised learning, and quantile and expected shortfall regression, which have important applications in the social sciences. He has developed original and efficient solutions while balancing optimization performance and statistical accuracy and establishing strong performance guarantees for his approaches.

Recent and Significant Publications:

Tan, K.M., Wang, Z., Zhang, T., Liu, H., and Cook, R.D. (2018). A convex formulation for high dimensional sparse sliced inverse regression. *Biometrika*, 105(4):769-782.

Tan, K.M., Wang, Z., Liu, H., and Zhang, T. (2018). Sparse generalized eigenvalue problem: Optimal statistical rates via truncated rayleigh flow. *Journal of the Royal Statistical Society: Series B*, 80(5):1057-1086.

Tan, K.M., Wang, L., and Zhou, W. (2022). High-dimensional quantile regression: Convolution smoothing and concave regularization. *Journal of Royal Statistical Society: Series B*, 84(1):205-233.

Tan, K.M., Sun, Q., and Witten, D.M. (2023). Sparse reduced rank huber regression in high dimensions. *Journal of the American Statistician Association*, in press.

He, X., Tan, K.M., and Zhou, W. (2023). Robust estimation and inference for expected shortfall regression with many regressors. *Journal of the Royal Statistical Society: Series B*, in press.

Service: Professor Tan has served on the labor-intensive doctoral and master's admissions committees and a number of other department committees, and contributed to the profession through refereeing, conference organizing, and grant panel service. His CAREER grant launched an outreach effort which contributes to DEI. Overall, his service record fully meets all expectations.

External Reviewers:

Reviewer (A): “[Professor Ming] has been highly productive with many publications in an impressive range of top journals, and has built deep collaborations with many faculty across different institutions in addition to mentoring students. He has focused on several different research areas, building deep contributions through a series of papers in each one. In addition to his strong research, I am also impressed by his teaching statement—he has clearly invested massively in being an effective and engaging teacher, with courses that incorporate live coding, student projects, one-on-one mentorship, case studies, etc. In my view his excellent work, both in terms of research and teaching/mentorship, certainly meets and exceeds the criteria for promotion to tenure, and I support his promotion with greatest enthusiasm. I am confident that his career will continue to flourish and look forward to seeing his future work.”

Reviewer (B): “[Professor Tan] is a talented scholar and he has been very active on the interface between statistics and optimization. The solutions for these problems benefit substantially from a deep integration between optimization and statistics and [he] has pursued that.”

Reviewer (C): “This impressive body of work exceeds the tenure threshold and criteria stipulated by my institution...The collaborative approach, coupled with the thematic alignment of various topics with their collaborators' expertise, speaks to their ability to forge productive partnerships. This nuanced balance reflects their strategic approach to advancing knowledge and expanding the boundaries of their field... [Professor Tan's] accomplishments in securing research grants are truly exemplary.”

Reviewer (D): “I am happy to say that [Professor Tan] did not compromise depth for breadth in any of his research endeavors. He is a prolific scholar who was careful to choose a few very impactful areas in which he can play a leadership role, and I have no doubt that he is on the right path for it. Moreover, his high quality work is likely to make an impact on many other disciplines, beyond statistics. Based on the totality of his work, [Professor Tan] belongs to the top of his peer group. If he were my colleague at [my institution], I would support his promotion and tenure case very strongly.”

Reviewer (E): “[Professor Tan’s] research spans a wide variety of areas from mainstream biostatistics to optimization and machine learning. His publications reflect these broad interests and talents. As statistics and machine learning merge he seems well poised to accelerate his already outstanding record of scholarship. His recent NSF CAREER award also reflects this history of accomplishment. In my view he is eminently deserving of promotion to associate professor with tenure at the University of Michigan.”

Reviewer (F): “Overall, I believe Dr. Tan has been a very strong junior researcher, has contributed solid and productive research, and has demonstrated fantastic technical abilities. He has served the community quite well by participating in many organizational committees in and out of U. Michigan. He has been working with a good number of graduate students. Finally, he has been remarkably successful in obtaining external funding, including the prestigious NSF CAREER Award in 2023.”

Summary of Recommendation:

Professor Tan is a productive and original scholar working at the highly impactful interface between statistics and optimization, with a strong record of publications, funding, and Ph.D. advising. His teaching record at both the undergraduate and the graduate levels is excellent, and he has conscientiously contributed through service to both the department and the discipline. The Executive Committee of the College of Literature, Science, and the Arts and I recommend that Assistant Professor Kean Ming Tan be promoted to the rank of associate professor of statistics, with tenure, College of Literature, Science, and the Arts.



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Anne Curzan, Dean  
Geneva Smitherman Collegiate Professor of  
English Language and Literature, Linguistics,  
and Education

Arthur F. Thurnau Professor  
College of Literature, Science, and the Arts

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