

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

Ambuj Tewari, assistant professor of statistics, College of Literature, Science, and the Arts, and assistant professor of electrical engineering and computer science, College of Engineering, is recommended for promotion to associate professor of statistics, with tenure, College of Literature, Science, and the Arts, and associate professor of electrical engineering and computer science, without tenure, College of Engineering.

Academic Degrees:

Ph.D.	2007	University of California, Berkeley
M.A.	2005	University of California, Berkeley
B. Tech.	2002	Indian Institute of Technology

Professional Record:

2013 – present	Assistant Professor, Department of Electrical Engineering and Computer Science, University of Michigan
2012 – present	Assistant Professor, Department of Statistics, University of Michigan
2010 – 2012	Post-doctoral Fellow, Institute of Computational Sciences and Engineering, University of Texas, Austin
2011	Visiting Researcher, Microsoft Research, Richmond
2008 – 2010	Research Assistant Professor, Toyota Technological Institute, Chicago
2008 – 2010	Assistant Professor (non-tenure track), Department of Computer Science, University of Chicago

Summary of Evaluation:

Teaching – Professor Tewari is an effective and dedicated teacher of undergraduate and graduate students. In classrooms, he is confident, energetic, organized and presents engaging lectures. He has taught eight lecture-based classes, including a core undergraduate course in probability and statistics, and a core Ph.D. level course on computational statistics. Outside the classroom, Professor Tewari actively involves undergraduate students in his research program. He has supervised nine undergraduate students and six Master's students in his research group. He has also led teams in challenge projects, and has taught in a summer school for undergraduate students aiming to recruit diverse and talented students to graduate programs. He is a highly active mentor for Ph.D. students, with six under his supervision.

Research – Professor Tewari is a highly productive researcher in the machine learning community. He has made significant and impactful contributions to theory and computation in statistical learning with a focus on applications to mobile health. His joint paper with P. L. Bartlett (*Proceedings of the 21st Annual Conference on Learning Theory*, 2008) pushed the boundaries and arrived at new insights, which has stimulated much subsequent work. His work with A. Rakhlin and K. Sridharan (*Journal of Machine Learning Research*, 2015, and in *Probability Theory and Related Fields*, 2015) on online learning addressed fundamental issues in the emerging area by providing necessary and sufficient conditions for supervised learning with sublinear minimax loss. Professor Tewari also developed a unified theory on sequential

prediction by the introduction of new conceptual tools needed to handle sequential prediction. For high dimensional data analysis, Professor Tewari designed scalable optimization algorithms with theoretical guarantees. His work differs from much of the high dimensional data analysis work in the statistics literature because of his ability to couple theory and algorithms in innovative ways. Professor Tewari received a 2015 CAREER award from the National Science Foundation to pursue an ambitious research agenda to develop methods and algorithms with an mHealth focus. This funding will enable Professor Tewari to grow as a researcher and educator in data science and mHealth.

Recent and Significant Publications:

- “Sequential complexities and uniform martingale laws of large numbers,” with A. Rakhlin and K. Sridharan, *Probability Theory and Related Fields*, 161(1-2), 2015, pp. 111-153.
- “Online ranking with top-1 feedback,” with S. Chaudhuri, in *Proceedings of the 18th International Conference on Artificial Intelligence and Statistics, Vol. 38, Journal of Machine Learning Research Workshop and Conference Proceedings*, 2015, pp. 129–137 (honorable mention, Best Student Paper Award).
- “On the non-asymptotic convergence of cyclic coordinate descent methods,” with A. Saha, *SIAM Journal on Optimization*, 23(1), 2013, pp. 576–601.
- “On the consistency of multiclass classification methods,” with P. L. Bartlett, *Journal of Machine Learning Research*, 8, 2007, pp. 1007-1025 (invited paper).

Service – Professor Tewari has actively contributed his efforts to a variety of professional services. He is a regular reviewer for journals and workshops. With the University of Michigan, he has served on thesis committees for twelve doctoral students and is currently an advisor for the data science major. He has also served on several departmental committees, including the Computing and the Master’s Admissions Committees.

External Reviewers:

Reviewer (A)

“I strongly support this promotion, without any reservations whatsoever: Dr. Tewari is one of the strongest researchers [in his cohort] world-wide working in the intersection of machine learning and statistics. ... Ambuj is well on the path of becoming one of the world’s top theoretically-inclined machine learning researchers. His record is comparable with that of the current top senior researchers when they were his age...”

Reviewer (B)

“Dr. Tewari is one of the rising stars in modern statistical science, with an impressive reputation in statistical machine learning, precision medicine, dynamic treatment regimes, and related areas. ... He is also an excellent communicator and a thoughtful, innovative and highly effective teacher. He is truly a consummate academic in all of the major professional dimensions. ... He is a very valuable asset for your university and, based on my assessment, would meet and exceed the criteria for promotion and tenure at [my institution].”

Reviewer (C)

“Based on his performance up to date, Dr. Tewari has excelled himself in research, teaching, student mentoring, and professional services. The high quality of Dr. Tewari’s research can be

easily reflected by his grant support. ... In my opinion, he is one of the strongest researchers in his peer group working on machine learning.”

Reviewer (D)

“Ambuj does excellent research. ... I perhaps most admire his line of work with Rakhlin and Sridharan that provides an elegantly unified framework for studying online learning, deriving algorithms, and proving bounds, with deep connections to game theory, statistics, and probability theory. This is an exquisitely beautiful body of work whose insights have significantly advanced our fundamental understanding of learning.”

Reviewer (E)

“...Dr. Tewari has demonstrated excellent research scholarship and has established himself internationally as a top researcher in machine learning. From the criteria about research excellence provided to me about the University of Michigan’s tenure and promotion process, I believe Dr. Tewari easily meets and surpasses the criteria in terms of research and impact on [the] discipline in all respects listed in the evaluation request. ...he is amongst the top 10 most productive and influential researchers...in his age group.”

Reviewer (F)

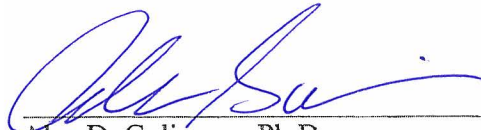
“Ambuj is a visible and productive scholar in the machine learning community who has made significant contributions to theory and has recently embarked on an [sic] a promising applied agenda in health care. ... His theoretical work demonstrates a deep understanding of statistical learning and optimization, as well as an ability to generate original insights and to carry out and polish rigorous mathematical analyses.”

Summary of Recommendation:

Professor Tewari’s research in statistics and data science has earned him a national reputation as a productive and impactful scholar. He is also a dedicated and effective teacher and mentor to students at all levels. The Executive Committees of the College of Literature, Science, and the Arts, College of Engineering, and we recommend that Assistant Professor Ambuj Tewari be promoted to the rank of associate professor of statistics, with tenure, College of Literature, Science, and the Arts, and associate professor of electrical engineering and computer science, without tenure, College of Engineering.



Andrew D. Martin, Dean
Professor of Political Science and Statistics
College of Literature, Science, and the Arts



Alec D. Galimore, Ph.D.
Robert J. Vlasic Dean of Engineering
College of Engineering

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