Linear Programs in n^2.38 time via Sketching

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Abstract: We show how to solve linear programs with accuracy epsilon in time n^{omega+o(1)} log(1/epsilon) where omega~2.3728639 is the current matrix multiplication constant. This hits a natural barrier of solving linear programs since linear systems is a special case of linear programs and solving linear systems require time n^{omega} currently.

Joint work with Michael Cohen, Zhao Song and Richard Zhang

Bio: Yin Tat Lee is an assistant professor in the Paul G. Allen School of Computer Science & Engineering at the University of Washington and a visiting researcher in Microsoft Research AI.

His research interests are primarily in algorithms and they span a wide range of topics such as convex optimization, convex geometry, spectral graph theory, and online algorithms. His primary research goal is to find algorithms for solving a general class of convex optimization problems.

He has received a variety of awards for his work, including Best Paper Award and 2 x Best Student Paper Awards at FOCS, Best Paper Award at SODA, Best Paper Award at NeurIPS, Sprowls Award and NSF CAREER Award, A.W. Tucker Prize, and Microsoft Research Faculty Fellowship.