Abstract

Examples of polyhedral sets generated by a finite point set include its convex and conical hull. The “frame” of these point sets are minimal subsets needed to describe the polyhedral hull. Applications of the frame problem can be found in nonparametric multivariate statistics, streamlining facial decomposition, finding nonredundant constraints in systems of linear inequalities, stochastic programming, data envelopment analysis (DEA), and even astronomy. The problem of identifying a frame is not difficult but it becomes challenging when the point sets are large; therefore there is an interest in new algorithms that can do this quickly and efficiently. Recent interest has turned to the case of streaming data. We present the fundamentals of the frame problem and discuss recent algorithms.

Biography

José H. Dulá, Ph.D., is a professor in the Supply Chain Management and Analytics Department in the School of Business at VCU. His undergraduate and Ph.D. degrees are from the University of Michigan. He also holds a Master’s degree from Stanford University and a post-doctorate from the University of Leuven in Belgium. Before arriving to VCU in 2004 he had academic appointments at Ole Miss and Southern Methodist University. He has served as Chair of the Management Department from 2009-2011 and Associate Dean for Research and Doctoral Studies from 2011-15. Dulá’s research is in applying optimization methods to problems in efficiency and productivity analysis and rankings. He also works on topics in robust methods in the analysis of large data sets. His articles have appeared in Operations Research, Mathematical Programming, INFORMS Journal of Computing, European Journal of Operational Research, Computational Geometry: Theory and Applications, among others. He is an associate editor for International Transactions in Operations Research and Journal of Productivity Analysis.