

Literature

The standard book on convex analysis is [7]. A more recent work is [5].

A comprehensive book on the theory, applications, and methods of convex optimization is [2]. It covers a good fraction of the course material. Another book on this topic is [1], or the monograph [6], which covers a much broader spectrum of convex optimization methods, in particular first-order methods.

For further information on the MaxCut problem see [3]. Here one can find also the description of an application of MaxCut to finding ground states of spin glasses. The classical article describing the semi-definite relaxation of the MaxCut problem and the randomized procedure to recover a sub-optimal cut is [4].

References

- [1] Aharon Ben-Tal and Arkadi Nemirovski. *Lectures on Modern Convex Optimization - Analysis, Algorithms, and Engineering Applications*, volume 2 of *MOS/SIAM Series on Optimization*. SIAM, 2001.
- [2] Stephen Boyd and Lieven Vandenberghe. *Convex Optimization*. Cambridge University Press, 2004.
- [3] Michel M. Deza and Monique Laurent. *Geometry of Cuts and Metrics*, volume 15 of *Algorithms and Combinatorics*. Springer, Berlin, 1997.
- [4] Michel X. Goemans and David P. Williamson. Improved approximation algorithms for maximum cut and satisfiability problems using semidefinite programming. *J. Assoc. Comput. Mach.*, 42(6):1115–1145, Nov 1995.
- [5] Jean-Baptiste Hiriart-Urruty and Claude Lemaréchal. *Convex Analysis and Minimization Algorithms I*, volume 305 of *Grundlehren der mathematischen Wissenschaften*. Springer, Berlin, 1996.
- [6] Yurii Nesterov. *Lectures on Convex Optimization*, volume 137 of *Springer Optimization and Its Applications*. Springer, 2018.
- [7] Ralph Tyrrell Rockafellar. *Convex Analysis*. Princeton University Press, 1997.