Convex Optimization in Signal Processing and Communications

Palomar, Daniel P. and Yonina C. Eldar. *Convex Optimization in Signal Processing and Communications.* New York, NY: Cambridge University Press, 2010, 498 pp. $85.00 (Hardbound).

Over the past two decades there have been significant advances in the field of optimization. In particular, convex optimization has emerged as a powerful signal-processing tool, and the range of applications continues to grow rapidly. This book, written by a team of leading experts, sets out the theoretical underpinnings of the subject and provides tutorials on a wide range of convex-optimization applications. Emphasis throughout is placed on cutting-edge research and on formulating problems in convex form, making this an ideal textbook for advanced graduate courses and a useful self-study guide.

Topics covered:

- automatic code generation
- graphical models
- gradient-based algorithms for signal recovery
- semidefinite programming (SDP) relaxation
- radar waveform design via SDP
- blind source separation for image processing
- modern sampling theory
- robust broadband beamforming
- distributed multiagent optimization for networked systems
- cognitive radio systems via game theory
- the variational-inequality approach for Nash-equilibrium solutions

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