# The value of conic optimization for analytics practitioners

**Erling D. Andersen**
MOSEK ApS,
Email: e.d.andersen@mosek.com
Personal WWW: https://erling.andersens.name
Company WWW: https://mosek.com

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Linear optimization, also known as linear programming, is a modelling framework widely used by analytics practitioners. The reason is that many optimization problems can easily be described in this framework. Moreover, huge linear optimization problems can be solved using readily available software and computers. However, a linear model is not always a good way to describe an optimization problem since the problem may contain nonlinearities. Nevertheless such nonlinearities are often ignored or linearized because a nonlinear model is considered cumbersome. Also there are issues with local versus global optima and in general it is just much harder to work with nonlinear functions than linear functions.

Over the last 15 years a new paradigm for formulating certain nonlinear optimization problems called conic optimization has appeared. The advantage of conic optimization is that it allows the formulation of a wide variety of nonlinearities while almost keeping the simplicity and efficiency of linear optimization. Therefore, in this presentation we will discuss what conic optimization is and why it is relevant to analytics practitioners. In particular we will discuss what can be formulated using conic optimization, illustrated by examples. We will also provide some computational results documenting that large conic optimization problems can be solved efficiently in practice.

To summarize, this presentation should be interesting for everyone interested in an important recent development in nonlinear optimization.