On the automated discovery of facet inducing inequalities

Adam Dejans, Serge Kruk*, Jason Medcoff, Blair Sibu, Oakland University

We present a new tool for researchers in combinatorial optimization. From a parametrized description of a set of constraints, the tool constructs the convex hull of feasible points and, under some reasonable assumptions about the facial structure of the underlying polytope, infers families of facet-defining inequalities. The internal engine is a fast parallel implementation of the Fourier-Motzkin algorithm, guided by an inference mechanism for the relevant rational inequalities.