

Projection onto cones generated by epigraphs of perspective functions

Luis Briceño

Universidad Técnica Federico Santa María & Center for
Mathematical Modeling

In this talk we provide an efficient computation of the projection onto the cone generated by the epigraph of the perspective of any convex lower semicontinuous function. Our formula requires solving only two scalar equations involving the proximity operator of the function. This enables the computation of projections, for instance, onto exponential and power cones, and extends to previously unexplored conic projections, such as the projection onto the hyperbolic cone. We compare numerically the efficiency of the proposed approach in the case of exponential cones with an open source available method in the literature, illustrating its efficiency.

In Special Session 21 on Optimization and Control at the Mathematical Congress of the Americas 2025.