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OPTIMALITY CONDITIONS AND SUBDIFFERENTIAL CALCULUS
FOR INFINITE SUMS OF FUNCTIONS

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We provide some (uniform/firm/robust lower semicontinuity) decoupling techniques suitable for infinite optimization problems that are not necessarily convex. Consequently, fuzzy-like subdifferential calculus for sums of infinite collections of functions are established, along with necessary optimality conditions (multiplier rules) for uniform local minima. We do not rely on the Lipschitz continuity assumptions, which are usually involved in previous approaches. As an illustration of these results, specifically to motivate the use of infinite sums in optimization and variational analysis, we consider providing new dual schemes for general infinite convex optimization problems, where the corresponding dual is expressed as an infinite sum of the (weighted) constraints. Such duals allow shrinking the duality gap and guaranteeing a strong duality result.

REFERENCES

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