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A Note on the Paper "Optimality Conditions for Optimistic Bilevel Programming Problem Using Convexifactors"

Bhawna Kohli[1]

Abstract
This note concerns about the conclusion of a lemma of a published paper of this journal.

Keywords Bilevel programming problem · Convexifactors · Value function · Constraint qualifications · Optimality conditions

1 Introduction

Bilevel programming problems are hierarchical problems of two decision makers, where the first decision maker, or the leader, gives his choice and the second decision maker, or the follower, reacts optimally on it and the optimal solution is then used to calculate the objective function value of the leader's problem. Kohli [1] introduced two versions of nonsmooth Abadie constraint qualification and employed the weaker version to develop Karush–Kuhn–Tucker type necessary optimality conditions for optimistic bilevel programming problem with convex and nonconvex lower-level problems, using an upper estimate of Clarke subdifferential of value function and the concept of convexifactor. The conclusion of [1, Lemma 5.2] is not correct. Here, we correct its conclusion and also the conclusion of the necessary optimality conditions, which makes use of it.

2 Optimality Conditions

We begin this section by providing a change in the conclusion of the lemma.

Remark 2.1 In the conclusion of [1, Lemma 5.2], $0 \in B - A$ should be replaced by $0 \in B + A$ [2, Lemma 2.1].

✉ Bhawna Kohli
   bhawna_kohli@rediffmail.com

1 Department of Mathematics, P.G.D.A.V. College, University of Delhi, New Delhi 110065, India

Remark 2.2 [1, Theorem 5.1] makes use of [1, Lemma 5.2]. There is a change from '-'sign to '+' sign after $\mathrm{conv}\partial^* F(\bar{x}, \bar{y})$ in the necessary optimality condition (i) ([1, Theorem 5.1]) and necessary optimality condition (11) (Page 646) after applying [1, Lemma 5.2] with the above mentioned change to the sets $\mathrm{coneconv}A$ and $\mathrm{conv}\partial^* F(\bar{x}, \bar{y})$.

Remark 2.3 In [1, Example 5.4] and [1, Example 5.5], we can take $G(x, y)$ from [1, Example 5.6] to achieve our target.

Remark 2.4 In [1, Example 5.6], we can take $G(x, y)$ from [1, Example 5.2] to achieve our target.

3 Conclusions

Kohli [1] investigated bilevel programming problem. Here, we correct the conclusion of [1, Lemma 5.2] as well as the conclusion of optimality conditions, which makes use of it.

References

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2. Kohli, B.: Necessary and sufficient optimality conditions using convexifactors for mathematical programs with equilibrium constraints. Rairo Oper. Res. (2018). https://doi.org/10.1051/ro/2018084

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