

ABSTRACT

A Study on Vector Variational-like inequalities using Convexificators and it's Application to its Bilevel Form

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This work inter-relates variational inequality and optimization problems. We deal with the vector version since the vector version of both the problems are of interest to those models (either related to transport or any other networks) where the costs involved are in the form of vectors. Sometimes it is found that the underlying mappings in such models may lack the convexity structure. The notion of invexity comes into play when the convexity is relaxed and the concept of confiscators are utilized to sharpen the results related to the interface of optimization, equilibrium problems and variational inequalities. In the present work, we study the vector variational-like inequalities, namely Stampacchia and Minty type under invexity in the framework of confiscators. Equivalence between both the problems along with the link to vector optimization problem is analyzed. Further the bilevel version of these problems are formulated followed by the study on the solution procedure involving the auxiliary principle technique. An iterative algorithm is constructed. It is proved that the approximates obtained converge strongly to the exact solution.
