Algorithms for Computing of Optimization Problems with a Common Minimum-Norm Fixed Point with Applications

Authors : Apirak Sombat, Teerapol Saleewong, Poom Kumam, Parin Chaipunya, Wiyada Kumam, Anantachai Padcharoen, Yeol Je Cho, Thana Sutthibutpong

Abstract : This research is aimed to study a two-step iteration process defined over a finite family of σ-asymptotically quasi-nonexpansive nonself-mappings. The strong convergence is guaranteed under the framework of Banach spaces with some additional structural properties including strict and uniform convexity, reflexivity, and smoothness assumptions. With similar projection technique for nonself-mapping in Hilbert spaces, we hereby use the generalized projection to construct a point within the corresponding domain. Moreover, we have to introduce the use of duality mapping and its inverse to overcome the unavailability of duality representation that is exploit by Hilbert space theorists. We then apply our results for σ-asymptotically quasi-nonexpansive nonself-mappings to solve for ideal efficiency of vector optimization problems composed of finitely many objective functions. We also showed that the obtained solution from our process is the closest to the origin. Moreover, we also give an illustrative numerical example to support our results.
Keywords : asymptotically quasi-nonexpansive nonself-mapping, strong convergence, fixed point, uniformly convex and uniformly smooth Banach space

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