Huang, X. X.

Extended well-posedness properties of vector optimization problems. (English)

Zbl 1028.90067
J. Optimization Theory Appl. 106, No. 1, 165-182 (2000).

Summary: The concept of extended well-posedness of scalar optimization problems introduced by *T. Zolezzi* [J. Optimization Theory Appl. 91, 257-266 (1996; Zbl 0873.90094)] is generalized to vector optimization problems in three ways: weakly extended well-posedness, extended well-posedness, and strongly extended well-posedness. Criteria and characterizations of the three types of extended well-posedness are established, generalizing most of the results obtained by Zolezzi for scalar optimization problems. Finally, a stronger vector variational principle and Palais-Smale type conditions are used to derive sufficient conditions for the three types of extended well-posedness.

MSC:

90C31 Sensitivity, stability, parametric optimization
49K40 Sensitivity, stability, well-posedness

Keywords:

vector optimization; asymptotically minimizing sequences; extended well-posedness; stability; vector variational principle

Full Text: DOI

References:

[1] Dentchev, A. L., and Zolezzi, T., Well-Posed Optimization Problems, Lecture Notes in Mathematics, Springer Verlag, Berlin, Germany, Vol. 1543, 1993.

[2] Zolezzi, T., Well-Posedness Criteria in Optimization with Application to the Calculus of Variations, Nonlinear Analysis: Theory, Methods, and Applications, Vol. 25, pp. 437-453, 1995. · Zbl 0841.49005 · doi:10.1016/0362-546X(94)00142-5

[3] Zolezzi, T., Extended Well-Posedness of Optimization Problems, Journal of Optimization Theory and Applications, Vol. 91, pp. 257-266, 1996. · Zbl 0873.90094 · doi:10.1007/BF02192292

[4] Bednarczuk, E., Well-Posedness of Vector Optimization Problems, Lecture Notes in Economics and Mathematical Systems, Springer Verlag, Berlin, Germany, Vol. 294, pp. 51-61, 1987. · Zbl 0643.90083

[5] Lucchetti, R., Well-Posedness toward Vector Optimization, Lecture Notes in Economics and Mathematical Systems, Springer Verlag, Berlin, Germany, Vol. 294, pp. 194-207, 1987.

[6] Loridan, P., Well-Posed Vector Optimization, Recent Developments in Well-Posed Variational Problems, Mathematics and Its Applications, Kluwer Academic Publishers, Dordrecht, Holland, Vol. 331, pp. 171-192, 1995. · Zbl 0848.49017

[7] Dencheva, D., and Helbig, S., On Variational Principles, Level Sets, Well-Posedness, and Solutions in Vector Optimization, Journal of Optimization Theory and Applications, Vol. 89, pp. 329-349, 1996. · Zbl 0853.90101

[8] Tammer, C., A Generalization of Ekeland's Variational Principle, Optimization, Vol. 25, pp. 129-141, 1992. · Zbl 0817.90098 · doi:10.1080/02331939208843815

[9] Aubin, J. P., and Ekeland, I., Applied Nonlinear Analysis, John Wiley, New York, NY, 1984. · Zbl 0641.47066

[10] Kuratowski, C., Topologie, Vol. 1, Panstwowe Wydawnicto Naukowa, Warszawa, Poland, 1958.

[11] Chen, G. Y., and Huang, X. X., A Unified Approach to the Existing Three Types of Variational Principles for Vector-Valued Functions, Mathematical Methods of Operations Research, Vol. 48, 1998. · Zbl 0971.90079

[12] Sawaragi, Y., Nakayama, X. X., and Tanino, T., Theory of Multiobjective Optimization, Academic Press, New York, NY, 1985. · Zbl 0566.90053

[13] Luc, D. T., Theory of Vector Optimization, Springer, Berlin, Germany, 1989.