A Note About Operations Like T_W (the Weakest t-Norm) Based Addition on Fuzzy Intervals

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Abstract: We investigate a relation about subadditivity of functions. Based on subadditivity of functions, we consider some conditions for continuous t-norms to act as the weakest t-norm T_W-based addition. This work extends some results of Marková-Stupňanová [15], Mesiar [18].

References

[1] D. Dubois and H. Prade: Additions of interactive fuzzy numbers. IEEE Trans. Automat. Control 26 (1981), 926–936.

[2] R. Fullér and T. Keresztfalvi: t-norm-based addition of fuzzy intervals. Fuzzy Sets and Systems 51 (1992), 155–159.

[3] D. H. Hong and S. Y. Hwang: The convergence of T-product of fuzzy numbers. Fuzzy Sets and Systems 85 (1997), 373–378.

[4] D. H. Hong: A note on t-norm-based addition of fuzzy intervals. Fuzzy Sets and Systems 75 (1995), 73–76.

[5] D. H. Hong and C. Hwang: A T-sum bound of LR-fuzzy numbers. Fuzzy Sets and Systems 91 (1997), 239–252.

[6] D. H. Hong and H. Kim: A note to the sum of fuzzy variables. Fuzzy Sets and Systems 93 (1998), 121–124.

[7] D. H. Hong and S. Y. Hwang: On the compositional rule of inference under triangular norms. Fuzzy Sets and Systems 66 (1994), 25–38.

[8] D. H. Hong: Shape preserving multiplications of fuzzy intervals. Fuzzy Sets and Systems 123 (2001), 93–96.

[9] D. H. Hong: Some results on the addition of fuzzy intervals. Fuzzy Sets and Systems 122 (2001), 349–352.

[10] D. H. Hong: On shape-preserving additions of fuzzy intervals. J. Math. Anal. Appl. 267 (2002), 369–376.

[11] T. Keresztfalvi and M. Kovács: g, p-fuzzification of arithmetic operations. Tatra Mountains Math. Publ. 1 (1992), 65–71.

[12] A. Kolesárová: Triangular norm-based addition preserving linearity of t-sums of fuzzy intervals. Mathware and Soft Computing 5 (1998), 97–98.

[13] A. Kolesárová: Triangular norm-based addition of linear fuzzy numbers. Tatra Mountains Math. Publ. 6 (1995), 75–82.

[14] A. Marková: T-sum of L-R-fuzzy numbers. Fuzzy Sets and Systems 85 (1996), 379–384.

[15] A. Marková–Stupňanová: A note to the addition of fuzzy numbers based on a continuous Archimedean T-norm. Fuzzy Sets and Systems 91 (1997), 253–258.

[16] R. Mesiar: A note on the T-sum of LR fuzzy numbers. Fuzzy Sets and Systems 79 (1996), 259–261.

[17] R. Mesiar: Shape preserving additions of fuzzy intervals. Fuzzy Sets and Systems 86 (1997), 73–78.

[18] R. Mesiar: Triangular-norm-based addition of fuzzy intervals. Fuzzy Sets and Systems 91 (1997), 231–237.

[19] B. Schweizer and A. Star: Associative functions and abstract semigroups. Publ. Math. Debrecen 10 (1963), 69–81.

[20] L. A. Zadeh: The concept of a linguistic variable and its applications to approximate reasoning, Parts, I, II, III. Inform. Sci. 8 (1975), 199–251, 301–357; 9 (1975) 43–80.