

Functions of the routines:

LWA.m: to compute the LWA [4, 5] for IT2 FSs (or the special cases of T1 FSs, intervals or numbers) whose FOUs have arbitrary shapes.

LWA9.m: to compute the LWA [4, 5] for IT2 FSs that are each defined by the nine parameters in Fig. 1. The output is also an IT2 FS that is described by the nine parameters. Many different kinds of FOUs can be obtained (by choosing different values for the nine parameters) including left- and right shoulder FOUs, and FOUs whose LMFs are triangles.

arrow.m: to add arrows to the figures in examples123.m and example4.m.

centroidIT2.m: to compute the centroid of an IT2 FS, where that FS is defined by the nine parameters $(a, b, c, d, e, f, g, i, h)$ shown in Fig. 1. It is used in getFOUs.m to rank the 32 word FOUs [2] obtained from survey data (datacopy.xls).

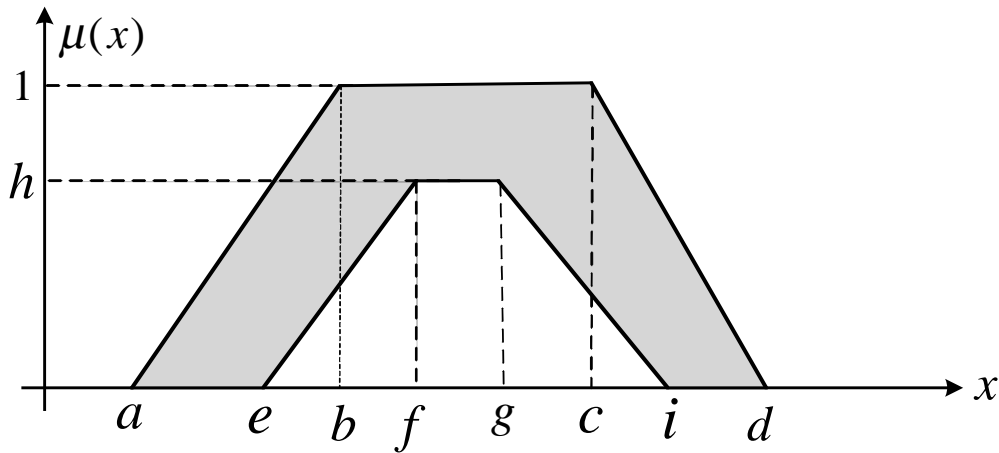


Fig. 1. The nine parameters $(a, b, c, d, e, f, g, i, h)$ to define an IT2 FS.

fuzzisitics.m: to compute an IT2 FS model from interval survey data. It implements the Interval Approach described in [1] and is called in getFOUs.m.

getFOUs.m: to compute the 32 word FOUs from interval survey data (datacopy.xls) using the Interval Approach [1] so that the words can be used in example4.m.

Jaccard.m: to compute the Jaccard similarity measure [2] between two IT2 FSs. It is used in example4.m.

EKM.m: to implement the EKM algorithms [3]. It is called in centroidIT2.m and LWA.m.

examples123.m: to create examples of weighted average, interval weighted average, FWA and LWA.

example4.m: to create an example of the LWA using FOU's obtained from the survey data.

References:

- [1] Feilong Liu and Jerry M. Mendel, "Encoding words into interval type-2 fuzzy sets using an *Interval Approach*," submitted to *IEEE Trans. on Fuzzy Systems*, 2007.
- [2] Dongrui Wu and Jerry M. Mendel, "A comparative study of ranking methods, similarity measures and uncertainty measures for interval type-2 fuzzy sets," submitted to *Information Sciences*, 2008.
- [3] Dongrui Wu and Jerry M. Mendel, "Enhanced Karnik-Mendel Algorithms," *IEEE Trans. on Fuzzy Systems*, in press, 2008.
- [4] Dongrui Wu and Jerry M. Mendel, "Aggregation using the linguistic weighted average and interval type-2 fuzzy sets," *IEEE Trans. on Fuzzy Systems*, vol. 15, no. 6, pp. 1145--1161, 2007.
- [5] Dongrui Wu and Jerry M. Mendel, "Corrections to 'Aggregation using the linguistic weighted average and interval type-2 fuzzy sets'," *IEEE Trans. on Fuzzy Systems*, in press, 2008.

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