

**Abstract:**

Fuzzy integrals are a powerful method to fuse data since they are defined in terms of fuzzy measures, which take into account the relationship between different inputs. The best known examples of fuzzy integrals are Choquet integrals and Sugeno integrals, which are also aggregation functions. In recent years, however, there exists a growing interest on defining generalizations of these integrals, which in some cases are not aggregation functions any more, since usual monotonicity is lost.

In this talk we will make a review of some of these new extensions, obtained replacing operations such as the product or the minimum by more general operators, as well as by considering the replacement of subtractions by more general dissimilarity operators. We will present some theoretical properties of these constructions. We will also consider in great detail some applications in different problems, which have motivated the introduction of these operators. In particular, we will consider their application to the computational brain problem.

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