

Type-2 Fuzzy Functional Inference Model and Its Properties

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ABSTRACT. This paper proposes a *type-2 fuzzy functional inference model* which extends fuzzy sets of the antecedent parts of fuzzy functional inference model to type-2 fuzzy sets. This paper first shows the properties of the type-2 fuzzy functional inference model. Second, it shows that the inference results of the type-2 fuzzy functional inference model can be easily obtained from the area and center of gravity in consequent parts even where general type-2 fuzzy sets are used to the antecedent parts. From the results, it also shows that the monotonicity property can be easily clarified. Moreover, it shows that IT2 fuzzy functional inference model can obtain different results compared with the simplified fuzzy inference model and T-S inference model. Finally, we state the applicability of equivalence property to deep fuzzy inference model.

Keywords: Type-2 fuzzy inference model, type-2 fuzzy sets, interval type-2 fuzzy sets, fuzzy functions, equivalence.