

## Software Cost Estimation with Fuzzy Inputs: Fuzzy Modelling and Aggregation of Cost Drivers.

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*Abstract:* Parametric software cost estimation models are well-known and widely used estimation tools, and several fuzzy extensions have been proposed to introduce a explicit handling of imprecision and uncertainty as part of them. Nonetheless, such extensions do not consider two basic facts that affect the inputs of software cost parametric models: cost drivers are often expressed through vague linguistic categories, and in many cases cost drivers are better expressed in terms of aggregations of second-level drivers. In this paper, fuzzy set elicitation techniques are used as a tool to model vague categories expressing cost driver quantities, focusing on two well-known COCOMO cost drivers. The results clearly indicate that such fuzzy set modelling approach affects significantly the estimation outcomes. In addition, the empirical adjustment of the DOCU cost driver as an aggregation of second-level documentation artifact measures is used to illustrate the modelling of flexible aggregation in the context of parametric estimation. Fuzzy set elicitation and aggregation operator modelling combined provide a novel approach to extending fuzzy parametric models for software estimation, which can be used as a complement to existing approaches.

*Keywords:* software cost estimation; fuzzy set; elicitation; aggregation operator design;

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