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io-port 01937780

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Developing a software size model for rule-based systems. A case study.

Expert Syst. Appl. 21, No. 4, 229-237 (2001).

A model of knowledge-based system size is proposed and empirically tested based on determining the information processing capacity of the system's rule base. Each rule in a knowledge-based system, it is suggested, is written in terms of a number of data objects used to structure each clause within the rule. Counts are proposed of the predicates, constants and variables used to express these data objects. The general form and method by which the model is derived is described and illustrated using data from a set of commercially developed Prolog programs. A 'hold out' sample is used to test the stability of the derived model to ensure the model works across data not part of the model building process. The most accurate model accounted for 94 per cent of the variance in the dependent variable, and had an average error of 18 per cent when estimating for particular data points. This model is then converted into a tool by banding the parameters of the regression model. The 'banding' effectively abstracts the original regression model to the level of a general description of the system under development. The banded tool partially solves the problem of how the input parameters can be known at the time the estimate is generated. The banded model still managed to maintain a high level of accuracy, with an average error of 20 per cent in estimates. Limitations and areas of further research are also discussed. (Autor) (Provider: Infodata)

Classification: I.2.1
Keywords: Software; Artificial intelligence; Economical problems; Expert system; Measurement; Cost evaluation; Model; Case study
doi:10.1016/S0957-4174(01)00042-2