Software Effort Estimation by Genetic Algorithm Tuned Parameters of Modified Constructive Cost Model for NASA Software Projects

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Abstract

Software estimation accuracy is one of the most difficult tasks for software developers. Defining the project estimated cost, duration and maintenance effort early in the development life cycle is greatest challenge to be achieved for software projects. Formal effort estimation models, like Constructive Cost Model (COCOMO) are limited by their inability to manage uncertainties and impression in software projects early in the project development cycle. A software effort estimation model which adopts a binary genetic algorithm technique provides a solution to adjust the uncertain and vague properties of software effort drivers. In this paper, COCOMO is used as algorithmic model and an attempt is being made to validate the soundness of genetic algorithm technique using NASA project data. The main objective of this research is to investigate the effect of crisp inputs and genetic algorithm technique on the accuracy of system's output when a modified version of the famous COCOMO model applied to the NASA dataset. Proposed model validated by using 5 out of 18 NASA project dataset. Empirical results show that modified COCOMO for software effort estimates resulted in slightly better as compared with results obtained in [30]. The proposed model successfully improves the performance of the estimated effort with respect to the Variance Account For (VAF) criteria, MMRE and Pred.
References


Index Terms

Computer Science

Software Engineering

Keywords

COCOMO; Effort estimation; algorithmic model

Variance Account For

MMRE
Pred