Predicting software project effort with algorithm based frameworks

Type: Research Oriented
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Spring, 2018

Abstract:

Background:
The need for accurate effort predictions for projects is one of the most critical and complex issues in the software industry. Effort estimation is a critical activity for planning and monitoring software project development in order to deliver the product on time and within budget [1]. The competitiveness of software organizations depends on their ability to accurately predict the effort required for developing software systems [1]. Several algorithmic approaches have been proposed in literature to support software engineers in improving the accuracy of their estimations.

Importance:
Software project managers need to be able to estimate the effort and cost of development early in the life cycle, as it affects the success of software project management [2]. To overcome this problem, various genetic/search-based algorithms that are much faster than exhaustive search procedures are being applied [3]. The decision of how to select the different techniques considering the characteristics of a specific dataset through genetic algorithms could be considered a search-based problem for software engineering [3]. The aim of this project is to compare various algorithm based frameworks for predicting software’s development effort.

Focused areas:
There are different techniques for software effort estimation. Some groups use well-known evolutionary learning algorithms (MMRE, PRED(25), PRED(50) and PRED(75)), while others use machine learning methods (SVR and ANFIS) [4]. Some popular machine-learning techniques like Artificial Neural Network, Fuzzy logic, Analogy estimation are also being utilized for estimating software effort which have been shown to consistently predict accurate results [6]. Genetic frameworks are becoming popular for selecting best learning schemes for effort prediction per dataset using the elitism techniques, with some well-known parameters like
Spearman’s rank correlation, median of the magnitude of relative error (MdMRE), and mean of the absolute residuals (MMAR) [3]. Some groups use novel algorithms for software development effort estimation, where they consider fuzzy rough sets for the analysis [5].

Expected outcomes:

Our research will benefit the project managers and clients to effectively manage the cost, time and resources to get the best optimized software product.

References:

Five Main References:


Other Reference (Optional)