

Ensemble effort estimation using selection and genetic algorithms

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Abstract: Software effort estimation plays a vital role in software project management. Several single estimation methods have been introduced vying to be the best estimation method. However, it is difficult to decide which method offers the best estimation result. This study proposes an ensemble effort estimation from several single estimation methods which yield different estimations but comparably high accuracy. The proposed technique employs a correlation-based feature selection algorithm to choose methods out of twelve methods derived from combinations of four transformation and three learning techniques. The ensemble then uses a genetic algorithm to build a mathematical function to compute one combined estimation from those selected method estimations. Experiments are set up based on six benchmark data sets to evaluate estimation performance. The resulting measure of error metrics show that the proposed ensemble technique deploying only necessary estimation methods can yield more accurate estimation than the best method from the twelve methods.

Keywords: software project management; software effort estimation; estimation method; ensemble method; transformation technique; learning technique; correlation; feature selection; genetic algorithm; error metrics.

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