Analysis of task effort estimation accuracy based on use case point size

J. Поповић, Д. Бојић, N. Королија

References:
IET SOFTWARE, pp. 1-8, Nov, 2015

Abstract:
The use case point (UCP) method is one of the most commonly used size estimation methods in software development. Applicability of UCP size for the project effort estimation is thoroughly investigated; however, little attention is devoted to the effort estimation of particular task types. The authors have created and cross-compared prediction models for estimating task-type efforts by means of UCP size using an Online analytical processing model and R packages on a set of 32 real-world projects, with the goal of facilitating analysis of the correlation between project sizes and effort required to complete task types. Requirements, scoping, functional specification, and functional testing task types have up to two times better estimation accuracies than project effort. Implementation has slightly better accuracy than the project effort, while the other task types are not correlated to the UCP size. Using estimates of the most correlated task types and other techniques, such as expert judgment for others, we improved the overall project effort prediction accuracy and decreased the error from 26 to 16%.

Keywords:
task analysis; data mining; software development management; software packages; formal specification; project management; cross-compared prediction model; functional testing task type; R package; complete task type; software development; used size estimation method; requirement analysis; project effort estimation; scoping analysis; correlated task type; online analytical processing model; task type effort estimation accuracy analysis; use case point size; UCP method; functional specification