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Cross Project Software Fault Prediction at Design Phase

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Abstract : Software fault prediction models are created by using the source code, processed metrics from the same or previous version of code and related fault data. Some company do not store and keep track of all artifacts which are required for software fault prediction. To construct fault prediction model for such company, the training data from the other projects can be one potential solution. The earlier we predict the fault the less cost it requires to correct. The training data consists of metrics data and related fault data at function/module level. This paper investigates fault predictions at early stage using the cross-project data focusing on the design metrics. In this study, empirical analysis is carried out to validate design metrics for cross project fault prediction. The machine learning techniques used for evaluation is Naïve Bayes. The design phase metrics of other projects can be used as initial guideline for the projects where no previous fault data is available. We analyze seven data sets from NASA Metrics Data Program which offer design as well as code metrics. Overall, the results of cross project is comparable to the within company data learning.

Keywords : software metrics, fault prediction, cross project, within project.
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