

Software Reliability Study using Environmental Factors

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Abstract

Software reliability studies are generally conducted based on the technical measurements like time between failures and the number of faults count. Such analysis may also be carried out based on certain environmental factors, which are defined in various phases of software testing. Earlier works define thirty-four environmental factors under five broad categories *viz.*, analysis and design, coding, testing, hardware systems and general. This work proposes to use a logistic regression model for conducting software reliability studies. A methodology is introduced for constructing the model based on principal components, which are extracted in two stages from the information obtained on the environmental factors. Application of the methodology is illustrated with a real data collected from personnel working in various software developing organizations.

Keywords: *Software reliability, Principal Components, Environmental Factors, Logistic Regression model.*