

Applying data mining techniques for measuring software quality

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ABSTRACT

Software is playing a crucial role in modern societies. The demand for software quality is increasing and is setting it as a differentiator which can determine the success or failure of a software product. Moreover delivering high quality products is becoming not just a competitive advantage but a necessary factor for companies to be successful [1]. There are many quality measures but a thorough evaluation of quality can arise from the use of an ISO standard [2]. On the other hand data mining and its ability to deal with large volumes of data and to uncover hidden patterns has been proposed as a means to support some quality parameters such as the evaluation and assessment of the maintainability of industrial scale software systems [3]. Data mining is employed to support semi-automated software maintenance [4] and comprehension and provide practical insights into systems specifics, assuming limited prior familiarity. Since software engineering repositories consist of text documents (e.g. mailing lists, bug reports, execution logs), the mining of textual artifacts is requisite for many important activities in software engineering: tracing of requirements, retrieval of components from a repository, identification and prediction of software failures, etc. Finally by applying mining techniques we can extract useful information and predict individual actions about users and calculate aggregate measures regarding the software quality.

References

- [1] Tian J. Quality-Evaluation Models and Measurements. *IEEE Software*, pp: 84-91, 2004.
- [2] ISO/IEC 9126-1, Software Engineering Product Quality International Standard. Geneva 2001.
- [3] Kanellopoulos Y., Dimopoulos T., Tjortjis C. and Makris C. Mining Source Code Elements for Comprehending Object-Oriented Systems and Evaluating Their Maintainability. *ACM SIGKDD Explorations v8.1, Special Issue on Successful Real-World Data Mining Applications*, June 2006.
- [4] P. Antonellis D. Antoniou Y. Kanellopoulos, C. Makris E. Theodoridis C. Tjortjis N. Tsirakis, A Data Mining Methodology for Evaluating Maintainability according to ISO/IEC-9126 Software Engineering-Product Quality Standard. *11th European Conference on Software Maintenance and Reengineering (CSMR)*, March 2007.