Statistical Analysis of Quality Metrics Distributions for Software Systems

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Introduction

• **Software Quality**
  • It is becoming more and more important due to our increasing dependence on software.
  • Hence is the primary aspect of the software development process.

• **Quality Metrics**
  • Indicators of the quality of the software.
  • Examples: LOC, DIT, NOM
Problem Definition

• Developing a statistical model of software quality metrics distributions to assess the quality of the software system
Literature

• “An empirical exploration of the distributions of the Chidamber and Kemerer object-oriented metrics suite”[1]

• “Dn-based architecture assessment of Java open source software systems” [2]

• “Quantitative evaluation of software quality metrics in open-source projects” [3]

• “Statistical modelling of software evolution processes”[4]
Approach

• Software project selection
• Software quality metric selection
• Metric tool selection
• Selection of distribution
Approach

- **Software project selection**
  - Open-source Java Projects
  - Domain Independent
  - Size
  - Age
Approach

• **Software quality metric selection**
  • Object oriented metric
  • Specialization Index[5] is a class level metric
  • Indicates the extent to which subclasses override their ancestors classes.

\[
SI = \text{DIT} \times \frac{\text{NORM}}{\text{NOM}}
\]
Approach

- **Metric tool selection**
  - Open-Source metric tools
  - Example: Eclipse JDK Plug-in, JDepend, CKJM

- **Selection of Distribution**
  - EasyFitXL Ad-In will be used to select a distribution and checking the goodness of the fit.
Summary

• A detailed literature has been studied

• Various quality metrics will be analyzed and studied using different metric tools.

• A statistical model of software quality metrics distributions for software systems will be developed.
References


Questions

Questions??