

Homework #2

Empirical Methods in Software Engineering and Computer Science

Assigned: January 28, 2010

Due: February 4, 2010 (Hard copy in the beginning of the class.)

This assignment will be discussed in class on February 9, 2010. Therefore, assignments will not be accepted after the beginning of the class on February 9th.

Both CS 591 & CS 791C students

I. Read the following paper which presents analysis of software faults and failures based on a large industrial case study:

N. E. Fenton and N. Ohissom, "Quantitative Analysis of Faults and Failures in a Complex Software System", *IEEE Transactions on Software Engineering*, Vol.26, No.8, August 2000, pp. 797-814.

Then, briefly discuss the following:

1. Why is this empirical study identified as a case study? (10 points)
2. Is there any method of comparison used in this study? What you would suggest as an appropriate method for comparison? (20 points)
3. Are there any confounding factors considered in this case study? (15 points)
4. Come up on your own with at least one example of confounding factors related to any of the hypothesis explored in this paper. Justify your answer. Suggest a way to eliminate the confounding factors. (25 points)

Only CS 791C students

II. Comment on the rigorousness of the case study. Identify at least one specific aspect of this study that you would improve. Describe what would be the benefit of the improvement. (25 points)

Optional reading

The following paper presents a replication of the Fenton and Ohisson's case study

C. Andersson and P. Runeson, A Replicated Quantitative Analysis of Fault Distributions in Complex Software Systems, *IEEE Transactions on Software Engineering*, Vol.33, No.5, May 2007, pp. 273-286.