



TEXAS TECH UNIVERSITY
DEPARTMENT OF COMPUTER SCIENCE
WHITACRE COLLEGE OF ENGINEERING



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How Significant Is the Effect of Fault Interactions on Coverage based Fault Localizations?

By Xiaozhen Xue
Texas Tech University

Date: October 1st, 2013 (Tuesday)

Time: 3:40pm-4:40pm

Venue: ECE 226 (Bullen Room)

Faculty Coordinator: Dr. Yong Chen (yong.chen@ttu.edu)

Student Coordinators: Navaneeth Thiagarajan, Dan Ferguson, Lakhan Jhavar

Abstract:

The effectiveness of coverage-based fault localizations in the presence of multiple faults has been a major concern for the software testing research community. A commonly held belief is that the fault localization techniques based on coverage statistics are less effective in the presence of multiple faults and their performance are deteriorated. The fault interference phenomenon refers to cases where the software under test contains multiple faults whose interactions hurdle effective debugging. The immediate research question that arises is to what extent are fault interactions influential. This study focuses on verifying the existence of fault interferences phenomenon in programs developed in programming languages with object-oriented features. The study then statistically measures the influence and significance of fault interactions on the performance of debugging based on coverage-based fault localizations. The result verifies that the fault interleaving phenomenon occurs. However, its impact on the performance of fault localizations is negligible.

Speaker Bio:

Xiaozhen Xue is a Ph.D. student in the Department of Computer Science. His research interests are software testing and software empirical analysis. He joined Dr. Akbar Namin's AVESTA research group in 2010. Before that, he got the Bachelor and Master degree in 2007 and 2010 in Software Engineering from Beijing Jiaotong University (China).

