

Colloquium

Department of Computer Science

Dr. Amiangshu Bosu

Dr. Amiangshu Bosu is a postdoctoral associate in the Department of Computer Science at Virginia Tech, working with Dr. Danfeng Yao and Dr. Barbara Ryder. He obtained his Ph.D. in Computer Science from the University of Alabama in 2015 under the supervision of Dr. Jeffrey Carver. His research spans empirical software engineering, peer code review, software security, android security, malware detection, mining software repositories, and social network analysis. He was selected as the outstanding graduate researcher of Computer Science at University of Alabama in 2014 and 2015 (two years in a row). He was a summer intern for the Empirical Software Engineering group at Microsoft Research during 2014 working with Dr. Christian Bird. His research appears in prestigious conferences and journals in the areas of software engineering such as FSE, ESEM, MSR, JSS, and OSS.

November 9, 2015

2:00 p.m.

Guyon Auditorium, Morris Library

Improving the Effectiveness of Contemporary Code Reviews

Abstract

Peer code review is the process of analyzing code written by a teammate to judge whether it is of sufficient quality to be integrated into the main project codebase. Both Open Source Software (OSS) and commercial software projects have rapidly adopted contemporary peer code review practices as a quality control gateway. Developers spend 10%~15% of their time performing code reviews. Therefore increasing the effectiveness of code review practices is beneficial for ensuring developers' time is spent wisely. Code reviews not only improve the quality of software code but also have other benefits (e.g., impression formation, knowledge sharing, and raising team awareness).

This talk will discuss the impact of code reviews and how to improve code review effectiveness. After introducing the objectives and the overall framework for my research, I will focus in on two specific studies. First, I will describe an empirical study at Microsoft, where I analyzed 1.5 million review comments from five popular Microsoft projects and uncovered many factors that affect the usefulness of review feedback. Then, I will talk about the usefulness of code reviews in preventing security vulnerabilities, and the characteristics of the vulnerable code changes that are identified during code reviews. In a study of 10 popular OSS projects, we found that most of the security vulnerabilities are introduced by the most experienced contributors. However, less experienced contributors are between 2 to 24 times more likely to introduce vulnerabilities. I will conclude this talk by drawing some conclusions from all of my studies, briefly describing my postdoctoral work on Android malware detection, and discussing future directions for my work.