Gamification of Software Testing in CS Education: Shifting from Rationalism to Empericism

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1 Abstract

This poster highlights our research into using a serious game to help teaching computer science students software testing to shift from an approach stemmed in rationalism to one more stemmed in empericism. In the industry, software testing is widely recognized as the default way to assess software quality. Many studies have been performed to demonstrate the need to improve testing education from the be beggining of Computer Science related degrees. However, for various reasons, Computer Science educators struggle to effectively include software testing in their curricula.

To fill the gap of novel techniques for testing education, our prior research revealed that students often adopt a so-called 'developer approach' in creating tests for software systems, utilizing primarily their conceptual knowledge from their programming courses. These students see testing as a problem-solving task, rooted in rational thinking. We advocate that software testing should not only be done from a ratiolism perspective, but also from a empericism perspective. Testing should be like small scientific experiments, where students use heuristics and exploration to form hypotheses about how the system should work, and then experiment to test these hypotheses and analyze the system's feedback.

To support educators in reaching these learning outcomes, we began using gamification and developing a serious game. We use socrative questioning to elicitate critical thinking skills of the students to identify risks concerning the system under test. The anecdotal results from pilot studies suggest that incorporating such interactive learning methods in computer science programs could change how software testing is understood and experiences by students.

Keywords: Software Testing Education, Gamification, Empiricism