

An Initial Study to Develop an Empirical Test for Software Engineering Expertise

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ABSTRACT

Expertise is the consistently superior performance on a set of tasks in some area of human activity. Software engineering expertise is difficult to define, and characterize empirically. In this paper, we present and evaluate three candidate criteria for assessing software engineering expertise. These three criteria are: experience; characteristics common to experts across fields; and software-specific proficiencies. We conducted an initial empirical study to evaluate these three definitions. In a laboratory experiment, we asked novice and expert subjects to complete a number of software engineering tasks on a web application. We found that all three criteria should be used to provide a full categorization of an individual's level of expertise. Experience is a useful first filter, but cannot be used as the only criterion. Domain-independent characteristics are most useful for assessing the quality of the criteria for labeling an individual as novice or expert. Software-specific proficiencies appear to be the most promising, but assessments for various skills, technologies, and problem domains will need to be developed separately.

General Terms

Measurement, Design, Economics, Experimentation, Human Factors.

Keywords

Expertise, empirical study, problem solving, novice, expert