Source Code Textual Information in Software Evolution Practice: Does It Matter?

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Experimentation is fundamental to any scientific and engineering discipline. Analyzing the results of the experiment involves learning, the encapsulation of knowledge and the ability to change and refine our models over time. Like other science and engineering disciplines, software engineering requires the cycle of model building, experimentation, and learning. This talk underlines quantitative and qualitative empirical experimentation conducted with human being and not in the context of source code textual information for software evolution. The talk first will introduce preliminaries in the context of software engineering and then an example of quantitative empirical investigation will be presented. In this respect, it will be discussed the results of a quantitative experiment (i.e., a controlled experiment) conducted to understand the effect of abbreviated identifiers in source code on program comprehension tasks and fault localization, in particular. As an example of qualitative empirical study, it will be presented an ethnographically-informed study. The goal here will concern the investigation of the role of source code identifiers and comments on program comprehension and evolution tasks. Students and professionals participated in these two studies. Finally, a novel lexical-based approach for software clustering will be introduced and the results of a quantitative experimentation conducted on this approach will be shown. The main goal of this talk is to provide attendees with guidelines to systematically design and perform experiments in scientific discipline and software engineering, in particular. On the other hand, the presented experiments will aim at showing how these guidelines should be applied in the context of software evolution.

Giuseppe Scanniello received the Laurea degree in Computer Science from the University of Salerno, Italy, in 2001, and the Ph.D. in Computer Science from the same university in 2005. From 2004 to 2005 he was research fellow at Department of Mathematics and Computer Science of the University of Salerno. In 2006 he joined the Department of Mathematics and Computer Science of the University of Basilicata, where he is currently an assistant professor and leads the Software Engineering Group. His research interests are in the area of Software Engineering and include Maintenance and Reverse Engineering, Empirical Software Engineering, Requirements Engineering, Green and Sustainable Software Engineering, Computer Supported Cooperative Software Engineering, Visual Languages for Software Modeling, and Global Software Development. In these fields he has published more than 100 papers, with researchers and professors of Italian and foreign universities, in international journals, books, and conference proceedings. He serves in the program and the organizing committees of international workshops, PhD schools, and conferences in the Software Engineering field. Examples are IEEE International Conference on Software Maintenance, Evaluation and Assessment in Software Engineering, IEEE International Conference on Program Comprehension, IEEE Web Systems Evolution, IEEE International Conference on Program Comprehension, Conference on Software Maintenance and Reengineering, and International Summer School on Software Engineering. He also was a reviewer of high quality international journals in the software engineering and computer science fields, e.g. Information and Software Technology, Journal on System and Software, Software Practice and Experience, International Journal Science of Computer Programming, International on Empirical Software Engineering, International Journal on Software Tools for Technology Transfer, International Journal on Software Engineering and Knowledge Engineering, IET Software, etc. He is a member of the Editorial Board of the International Journal of Patterns and Asian Journal of Computer Science. He also was an additional reviewer for a number of international conferences (e.g., International Conference on Software Engineering, Working Conference on Reverse Engineering). Giuseppe Scanniello also organized the International Workshops on Green and Sustainable Software (GREENS) and Machine Learning and Information Retrieval for Software Evolution (MALIR-SE). He also made seminars in various Universities and research organizations.