

Automatic analysis of software requirement for software product lines

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Abstract: A software product line (SPL) is a set of software-intensive systems that share a common, managed set of features satisfying the specific needs of a particular application domain and that are developed from a common set of core assets in a prescribed way. To build a software product line, the most important tasks that should be done beforehand is the analysis of the requirements of different systems or users of the particular domain. Requirement analysis for SPL aims at finding the common and variability model of requirements in a domain.

Software requirement specifications are usually expressed in natural language, which are informal, imprecise and ambiguous, thus analyzing them automatically is a challenging task. Moreover, as the requirement specifications from different users (or systems) are usually heterogeneous, hence the mapping between them should be done before further analysis. Nowadays, although methods towards automatic analysis of software requirements have been studied before, many of them have limitations which hinder their real applications, and effective researches in this area are still lacking. Hence in practice the analysis and mapping between multi-users' heterogeneous requirement documents is still done by humans. This leads to a lot of manpower, low efficiency and even error prone.

In response to the above problems, this talk will discuss the state of art in automatic analysis of software requirements for software product lines. We will discuss the main problems, concerns, and the existing approaches. And then we will focus on some new promising approaches that use natural language processing techniques, semantic analysis and machine learning methods. The framework, tools and experiments will be discussed in detail.



Bio: Yinglin Wang is a professor of School of Information Management and Engineering at Shanghai University of Finance and Economics. He got his Ph. D degree and Master degree from Nanjing University of Science and Technology in 1998, and 1992 respectively. He worked as a professor at Department of Computer Science and Engineering in Shanghai Jiao Tong University for many years before 2014. He has been a visiting professor at Stanford University in 2005. His current research interest includes software requirement analysis, information integration and machine learning. He conducted and complete many national funded projects of China in the related area since 1998. He has published huge number of papers in well-known journals and conference proceedings. He is an associate editor of IJSEKE, and he served as conference chairs, program chairs, and program committee members for many international conferences.