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# Automated Software and Service Composition

A Survey and Evaluating Review

 Springer

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# Preface

This book is the result of an exhaustive literature review I carried out in order to determine related work of my Ph.D. thesis.

It was motivated by the difficulty of getting an overview of the field of automated software composition in spite of the numbers of already existing surveys and the unclear search criteria they applied. Reading existing surveys only resulted in a list of approaches with no or only highly superficial discussions on relations among them. However, figuring out these differences and discussing the use cases and usefulness of the approaches is the actual work and the value of a survey. It is the aim of this book to save a great deal of time for those doing research in the area of automated software composition and who seek to locate their work within the pool of hundreds of others with similar (and sometimes even equal) titles but heavily different content.

Having the goal to be as transparent as possible regarding the inclusion and exclusion of papers, this book is accompanied by a web page containing all the papers found in the discourse of the search but finally excluded. Hence, if the reader is missing his approach, he or she is invited to visit the web page, <http://felixmohr.eu/research/crc901/survey>, where an explanation for the exclusion is given for each identified paper (of the 100.000). Also, if an author finds that the presentation of his approach is not adequate, I would be glad to discuss his or her objections.

There was a discussion on the title of this book during the review process. Initially, this book was entitled “Automated Software Composition.” However, most papers discussed in this book treat a problem called service composition, which caused the question: why should it not be entitled “Automated Service Composition”? I would argue that service composition *is* software composition (just a new name for the same thing). Of course, there are aspects in services that were not considered before, e.g., quality of service, but it is actually not possible to find a convincing example of software composition that cannot also be posed as a service composition problem. Talks with colleagues, e.g. at ASE 2014, clearly showed that it is important to show service composition in the context of the history of software composition and not as an isolated discipline. It is just that the idea of services

revitalized automated software composition and brought its own brand. Even though there are more publications on service composition, they can be located on the research line of traditional software composition. Since many authors are not aware of these roots, I consider it particularly important to also consider non-service composition approaches. Consequently, we decided to change the title to its current form in order to align the reader's supposed expectation with the actual book content.

Finally, I would like to add that this book was created in the context of my research on automated service composition within the Collaborative Research Center “On-The-Fly Computing” (SFB 901); this work, hence, was directly and financially supported by the German Research Foundation (DFG). Within this research project, the reader can find a great deal of interesting publications around (automated) service compositions and research dealing with service composition in on-the-fly service markets, i.e., quality assurance, privacy, service deployment, and much more.

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