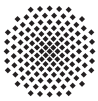

University of Stuttgart
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SQA

Master's Thesis (Master Informatik):

User Survey on classifying Evaluation Questions for Explanation Generation in Palladio

1 Introduction

Modeling and simulating software behavior using Palladio [1] can be an important step in ensuring the softwares quality. However, the end results of a simulation may not be sufficient to understand when and why a self-adaptive system decided to reconfigure itself.

With my masters thesis, I aim to provide one solution to this problem by adding an explanation generation component to the Palladio simulator. The component is meant to explain events occurring during a simulation to the user by aggregating relevant information surrounding each event into an easily readable form, e.g. a plain text sentence.

To provide a sounder basis for evaluating this component later on, I have assembled a list of questions and would like to collect feedback on how important each question appears to you. Please note that I have limited my examples and thus the more specific questions to the topic of auto scaling in web-based applications. This topic appears to be the most actively researched one in this field and thus provides a good basis for my thesis.

In section 3, I provide a short overview of relevant terms, followed by the questions I would like to collect feedback on in section 4.

2 Privacy Policy

All surveys will be anonymised and then stored upon submission. Aggregated Data will be shared publicly at the end of the thesis. The anonymised surveys themselves may be shared publicly at the end of the survey. Participation is completely voluntary. No participant can claim (partial) authorship of any work derived from this survey because of their participation. Thank you for your time.

3 Relevant Terms

Palladio Palladio [1] is a software architecture simulation tool used for analyzing software at a model level. It can point out performance bottlenecks, threats to the reliability of the software and other issues while allowing for subsequent optimization. For use with Palladio, software is modeled using the Palladio Component Model (PCM). This can be done using e.g. the Palladio Bench, an integrated modeling environment based on the Eclipse IDE.

Slingshot A new performance simulator for PCM models based on the Event-Driven Architecture [3] developed by Katić et al. [5][4]. It is more extensible than preexisting simulators and its event-based operation is well suited for generating explanations.

Self-adaptive Systems (SAS) These are systems that can change their behavior if changes in the environment, requirements or other aspects threaten to violate their system objectives. Self-adaptive software achieves this through constant monitoring and evaluation of its own behavior, triggering an adaptation if it detects non-satisfactory performance (e.g. [2], [6]).

Auto Scaling A method to automatically adjust the amount of available resources (processing power, number of servers etc.) for a web-based service, mostly used in a cloud-environment, to dynamically deal with a changing workload.

Service-Level Objectives (SLOs) Specific measurable characteristics such as certain levels of response time or availability that a service provider and their customer have agreed upon.

4 The Scenario and relevant Questions

Scenario You have modeled a self-adaptive system using the Palladio Bench. The system increases or decreases its available processing power to maintain SLOs such as an agreed upon response time. In the simulation, an increasing amount of user requests arrive at the system over time, ensuring that the inbuilt thresholds are crossed eventually and the system has to adapt.

Questions Thinking about the described scenario, please rank each of the following questions from 1 (not important) to 5 (very important). If you would expect the generated explanations to answer more/other questions, feel free to add and rank them using the blank lines and/or the text box at the end of this list:

- 1 2 3 4 5 Thresholds

☐	☐	☐	☐	★	Which threshold was crossed?
☐	☐	☐	★	☐	When was the threshold reached?
☐	☐	★	☐	☐	What was the thresholds value?
☐	☐	★	☐	☐	not only the absolute but maybe also the relative value (e.g., crossed by 20%)
☐	☐	☐	☐	☐	
☐	☐	☐	☐	☐	

- 1 2 3 4 5 Reaction/Scaling

☐	☐	☐	☐	★	What reaction was caused?
☐	☐	★	☐	☐	When did the reaction end?
☐	☐	★	☐	☐	When was the updated capacity available?
☐	☐	☐	☐	★	What was scaled?
☐	☐	☐	☐	☐	
☐	☐	☐	☐	☐	
☐	☐	☐	☐	☐	

- 1 2 3 4 5 SLOs

☐	☐	☐	☐	★	Which SLO was violated?
☐	☐	☐	☐	★	How long was the SLO violated and when?
☐	☐	☐	☐	★	What was the agreed upon threshold for each SLO?
☐	☐	☐	☐	☐	
☐	☐	☐	☐	☐	
☐	☐	☐	☐	☐	

  - Additional Questions

graphical explanation would be nice, so not only a text, but also the before and the after model (and highlights of the diff)

  - User Data
    - Are you researching or working in the field of computer science? I am
    - Have you worked with Palladio before? no
    - If yes, how many years of experience do you have with Palladio?

Contact

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References

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