

Reliability of Concurrent and Distributed Software

06 – 09 May 2014 @Oort

While software reliability is essential for society, modern concurrent and distributed software is too complex to validate using traditional techniques such as code inspection and testing only. Therefore, a wide range of formal verification techniques is under development. These techniques vary in efficiency, applicability and coverage. This Lorentz Center workshop@Oort brought together the diverse community involved in research on verification of concurrent and distributed software in order to exchange, compare, and unify approaches, and to discuss the state-of-the-art and emerging challenges. We believe this synergy to be essential to better address the full scope of real-world software, and to address the fragmentation of research in this area. We hope this meeting will be the first in a series of meetings to reach this overall goal.

The participants expressed their appreciation of the format of the workshop, and in particular of the collaborative spirit of open discussions avoiding the presentation format of standard conferences. Several initiatives for follow-up activities were taken, including

- new meetings on the theme of this workshop, including investigation of the possibility to create a COST Action on this topic,
- further investigation of the challenges in concurrent and distributed software discussed during the workshop, and comparison of the different approaches to handle them, which should result in joint research papers, and
- the investigation of the possibilities for a Marie-Curie Network within the theme of the workshop.

The workshop was mainly organized as discussions on themes spanning the future challenges of the topic. Each theme was introduced by an invited speaker. Before the workshop, verification challenges within concurrent and distributed software were sent out to the participants. During the workshop, ample time was used to discuss and compare the different solutions to the challenges. This led to interesting insights and provided focus, because the different techniques were all applied on the same examples. The challenge discussions also led to a long list of topics on future research directions.

In addition to the plenary discussions, we also had discussion sessions in smaller groups, discussing more focused problems. In particular, several discussion groups concentrated on what would be needed to make our techniques more applicable in an industrial context. To strengthen this theme, on Friday morning we had two invited presentations by industrial participants, who discussed their needs for techniques to increase the reliability of software.

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