



Workshop

EXPECTATIONS ON UPCOMING TP-BASED SOFTWARE – DEMONSTRATION AND DISCUSSION

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Dynamic Geometry Systems experiment with integration of automated geometry provers, i.e. with certain technologies from “(computer)theorem proving (TP)”. Recently an EU project has been finished with publication of fifteen web-based e-books in Scandinavia. At Graz University of Technology a TP-based prototype is under development for about ten years, which is still not available for classroom use for certain reasons.

By hands-on-experience we shall get an idea what to expect from TP-based educational software for mathematics in the future: independent learning might be extended by the systems' reliability and discovery learning might be extended by the variability of interaction with the systems:

The reliability results from the system's design based on formal logics. Students' input within a calculation solving a given problem of applied mathematics are reliably checked for “true / false”. Explanations for rejected input can be automatically generated due to the fact, that these systems represent underlying mathematics knowledge in a human readable format.

The variability results from the system's powerful mathematics engines working behind the scenes: If not satisfied with the progress of a calculation, one can go back a few steps; if got stuck, one can ask the system to propose a next step; or one creates different intermediate steps and watches the system trying a solution proceeding from the respective steps.

In the workshop we shall discuss possibilities and limits in the use of these technologies, as far as they are conceivable from the present systems and prototypes, and we shall try extrapolations to the near future.

The aims of the workshop are to inform educators about conceptual basics of TP, about conceivable advantages of TP technologies, as well as promotion of development for these technologies in order to meet the needs of education.