Prototyping "Systems that Explain Themselves" for Education

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Abstract

This extended abstract is the first brief overall system description of the ISAC prototype. What began more than a decade ago with trials to make calculational reasoning a stepwise construction as close to calculations in engineering mathematics, now appears as a prototype for a new generation of systems that explain themselves. The system description briefly covers the mathematics engine based on the proof assistant Isabelle, the Lucas-Interpreter which is able to propose a next step when a student gets stuck. Also the front-end is described as part of a web-based multi-user system implemented in Scala and Java Swing.