Revisiting the connection between 3D dynamic geometry systems and automated provers

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In the Nonstandard session of ACA 2007 Roanes-Lozano et al. gave a talk about connecting Calques3D, a 3D interactive geometry system, with a Maple package for automatic theorem proving and discovery in 3D geometry, paramGeo3D. In this talk I will make a critical review of their approach and I will describe an alternative Sage library that completely automates common tasks in 3D interactive systems. These tasks include derivation of new geometric objects and automatic proving and discovery of simple statements in Euclidean geometry.

Current bottleneck problems in this connection (treatment of degenerated conditions, incompleteness of the algebraic answers to geometric problems, and shortcomings in the translation of the algebraic results to geometric statements) will be highlighted. Furthermore, the remote access from any 3D geometric system to the described software will also be illustrated.

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