ADDING SYMBOLIC PROVING AND DISCOVERING CAPABILITIES TO GEOGEBRA.

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ABSTRACT

While GeoGebra can work wonders illustrating geometric properties, these can seldom be justified and become no more than visual proofs. Adding symbolic capabilities to GeoGebra would allow not only to prove known results, but also to discover new properties in a mathematically sound way.

Botana and Valcarce developed their own DGS (named GDI, see [2]) which, besides offering the standard functionalities, uses Mathematica and CoCoA to symbolically manipulate the algebraic information derived from geometric diagrams.

Several videos illustrating its use are available in the following YouTube channel:

http://www.youtube.com/user/mabanades

Moreover, the authors have developed a web application to remotely prove and discover geometric properties for constructions in *Cabri*, *Geometer's Sketchpad* and *Cinderella* (see [3]).

Instructions and examples can be found in

http://nash.sip.ucm.es/LAD/LAD.html

The modification proposed is the implementation of these ideas in GeoGebra together with the reported ongoing CAS integration.

As an example of the kind of problems that GeoGebra would be able to tackle after implementing the proposed functionalities, the computation of the equation of an envelope related to a generalized trammel of Archimedes (see [1]) will be demostrated by using GeoGebra and *Singular* withing a *SAGE* worksheet.

REFERENCES

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