

Stereos: A Language for Describing Stereometric Constructions

Milena Marić, Architectural Technical School, Belgrade, Serbia

Filip Marić, University of Belgrade, Serbia

Keywords: stereometry, solid geometry, 3d visualization, dynamic geometry system

"Stereos" is a tool for visualizing and teaching geometry of solids in 3D space (stereometry) and for producing mathematical illustrations in 3D. It follows the approach advertised by the "GCLC" dynamic geometry system (developed by Predrag Janicic), insisting that constructions are formal procedures, rather than drawings. Therefore, "Stereos" system accepts high level descriptions of stereometric constructions (in its custom syntax) and converts them to low-level input formats for some of the several supported 3D graphing engines (e.g., LaTeX/Sketch/TikZ, WebGL, JavaView, Matlab). Stereos supports all major solids (e.g., regular solids, pyramids, prisms, spheres, cones, cylinders), supports isometric transformations and can automatically construct intersections of solids. The tool is currently used in architectural high schools for preparing pupils for the entering exam to the Faculty of Architecture. The tool currently does not have any reasoning capabilities, but, due to its high level and descriptive input format, it is very suitable for use as a tool for visualization of formal stereometric content and for integration into a wider learning environment for solid geometry.