Semantic-based operators to support car sketching

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Abstract: This paper presents a first step in the elaboration of a semantic-based modelling environment addressed to the conceptual design phase of an industrial product. Up to now, shape generation and manipulation in aesthetic design are still based on low-level geometric tools that come from the classical computer-aided design paradigm. On the other hand, the design of a product is mainly driven by designers' creativity and high-level constraints. To capture and structure the semantics embedded in the first sketches representing the product, an ontology has been devised to guide more easily the generation and manipulation of curves that are basic elements of the product description in the early design phase. This ontology includes a taxonomy of the aesthetic curves in the automotive field and a curve manipulation setting based on a shape grammar, creating explicit connection between the two contexts.

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