

Implicit Surfaces for CAD and Computer Graphics

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Most commercial CAD systems use parametric representations (e.g., NURBS) for defining freeform shapes. This leads to significant problems in certain types of geometric computation, and also in the exchange of CAD models between different systems. The paper suggests that there are good reasons for developing alternative approaches to the representation of freeform shapes in CAD, based on the use of algebraic surfaces. Work in this direction is currently at an early stage, but some fruitful directions are being identified. The paper surveys the current state of this work, suggests possible applications for algebraic surfaces in CAD and computergraphics, and identifies some fruitful research areas.