



## TECHNOLOGY

# Geometry-Based Search Software

## OVERVIEW

Three-Dimensional Computer Aided Drawing (3D CAD) systems have become extremely popular these days and are frequently used to generate 3D models of parts and assemblies. Companies routinely set up databases of CAD models of their parts and assemblies. Manufacturing companies use these databases to find information that would be useful in estimating manufacturing costs, design reuse, etc. For example, the database of 3D CAD models can be searched for similar parts, and the manufacturing costs of the retrieved parts can be used to estimate the cost of new parts.

Current technology that allows for the searching of 3D CAD databases is inefficient because it often does not yield accurate results. Available search software uses projections of 3D CAD models on 2-dimensional planes to create 2D images, which are then compared with 2D images of the existing parts and assemblies. Such a search does not provide accurate results. Further, the available search criteria (filters) in this conventional software cannot be customized by the end user.

Researchers at the University of Maryland have developed a novel geometry based search software (GBSS) that overcomes the limitations of the existing technology. The GBSS creates a repository of 3D CAD models for different parts, wherein each 3D CAD model is identified by unique signatures. These unique signatures are extracted from a Stereolithography (STL) file of the 3D CAD model and stored in the database. A search query on the database would be translated into these signatures, and the database would be searched for the closest match.

The GBSS uses intelligent combinations of these signatures to give accurate results. The effect of each signature on the search results can be customized, i.e., a user can specify the weighting of each signature. The GBSS provides for a quick and advanced search, which can be tailored to the user's specific needs. Overall, the GBSS can offer industries more precise and time efficient control over their manufacturing and design processes.

For additional information, please contact the Office of Technology Commercialization, University of Maryland College Park, via phone at (301) 405-3947 or e-mail at [otc@umd.edu](mailto:otc@umd.edu).

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## Additional Information

## INSTITUTION

University of Maryland, College Park

**PATENT STATUS**

Patent(s) pending

**LICENSE STATUS**

Contact OTC for licensing information

**CATEGORIES**

- Information Technology

**EXTERNAL RESOURCES**

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