In recent years, along with the rapid development of 3D and virtual interaction technology, 3D graphic computing has proven its important position in many major fields. As the 3D-related resources has been increased recently, 3D scene and object modeling have gained a lot of attractions and supports from various communities. Unfortunately software products that are capable of manipulating these works are still limited in management aspect, making it difficult to extend them to their fullest potential. Users nowadays demand higher requirements from the lower-layer manage components of a 3D software. First, the software products must be able to provide a powerful search engine, which can filter through a large amount of 3D objects to find the desired 3D models or scenes from provided information. Second, the structure, characteristic or type of a 3D object must be analyzed in a reasonable speed to support the traditional semantic search.

These requirements lead to a creative idea of annotating the semantic contents to 3D objects. Semantic annotation help users not only maintaining the internal data and structure, but also the semantic contents of a 3D object. These semantic contents include the color, characteristic, type and other information such as the usage for applications. To fulfill the feature of combining all the semantic contents together, the annotating process must meet two required conditions.

For the first condition, the method of annotation must have an acceptable accuracy. This means it must have the ability to provide correct and unique information of a 3D object in a specific field. This condition ensures that in the 3D software products, users can easily find their desired 3D objects without filtering too much redundant and unrelated results. Also, user can quickly get the same-type resultant models from a provided type of model.

The other condition, which is efficiency-related, becomes necessary when we have to deal with large amount of data. Assume that annotation itself is a complex, time-consuming and repeated process, the total time which includes duration of user's manual operation and annotation cannot keep up to the standard requirements of a search engine. High-efficient requirements comprise two things: first, there must be supported tools or computer software to let the annotation process become automatic or semi-automatic, and the semantic contents can have fast inquiry and access; second, the repeated process is able to be recognized to be executed automatically.

From the above conditions and requirements, we introduce a WebGL and 3D model-based automatic semantic annotation system. This system is capable of automatically acquire the semantic contents of an object through the data structure analysis or comparing the characteristics between models.