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(54) **OBJECT MODELING SYSTEM AND PROCESS EMPLOYING NOISE ELIMINATION AND ROBUST SURFACE EXTRACTION TECHNIQUES**

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(57) **ABSTRACT**

A system and process for computer modeling of an object involving first capturing images of the object that collectively depict all the object's surfaces which are to be modeled. A series of 3D reconstructions are then derived from the images. Each of the reconstructions represent a portion of the object's surfaces. Noise elimination techniques are employed to reduce the number of extraneous reconstruction points. The individual 3D reconstructions are then registered to a common coordinate system to produce an overall 3D reconstruction of the object's surfaces. A surface representation of the object is extracted from the overall 3D reconstruction using robust surface extraction techniques, and if desired, a texture map for the surface representation of the object can be computed using the previously captured images to produce a photorealistic model of the object.

21 Claims, 11 Drawing Sheets

(1 of 11 Drawing Sheet(s) Filed in Color)

