Investigation of a Measurement Problem on the Complex Surface by MicroScribe Digitizer and RHINO：Typified by the Ear...

楊復勝、鄧志堅

E-mail: 9607786@mail.dyu.edu.tw

ABSTRACT

Using 3D software to mimic objects in industry is becoming more and more popular in recent years and what they emphasize is primarily on efficiency, cost and precision. To achieve the aim, this paper use surface modeling software, RHINO 3D, and its corresponding digitizer, Microscribe G2. The latter can transport the control points directly into the former. Some probable problems such as size, complexity and asymmetry of the objects in the mimicking are discussed. To cover the range of the problem, a human head artifact is chosen. The artifact is divided into seven regions and the control points are taken individually in each region. Followed by the introduction of transformation of the coordinate system, its modification is proposed and applied to combine the control points in the seven region into one unique coordinate system. After finishing the mimicking of the skull part in the artifact, two ears are formed separately due to its structure complexity. The two ears are matched closely into the skull through some refining process so that the whole model looks even more perfect.

Keywords : RHINO 3D ; MicroScribe ; rotation and section-by-section measurement

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