

以3D 人體掃描儀量測人體表面積及建立估算公式

林靜華, 游志雲

工業工程與系統管理學系

管理學院

kate@chu.edu.tw

摘要

The purpose of this study is to measure human body surface area (BSA) using 3D human body scanners, and to develop BSA estimation formula accordingly. The 3D human body scanner is capable of measuring human body surface form in an accuracy of 1 to 2 mm within a few seconds. However, the range data produced from scanning is incomplete. The effort to reconstruct a complete body surface must be done by software. After that, BSA was calculated by summing all surfaces of triangular meshes of the range data. The scanner was calibrated with a geometrical shaped box whose surface area was calculated mathematically using the measurements of digital vernier caliper. And the mean measurement error is 13.49cm² (0.36%). This study measured 30 male adults' BSA, and developed an estimation formula on stature height (H) and body weight (W) by non-linear regression. R² is 0.95 and the formula is . Extra measurements was done for 5 subjects to test the formula. The average prediction error was 1.17%.

關鍵字：human body surface area, 3D body scanner, anthropometry