100 學年度大四工工專題摘要

第　組	虛擬物件表面材質對於重量認知影響之探討
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摘　要

本研究以 Material Weighted Illusion (MWI)為基礎，探討虛擬物件表面材質對重量認知的影響。首先以三維建模軟體配合擬真繪圖技術，建立三種不同材質的虛擬物件，搭配七個形狀相同但重量不同的實體砝碼，做為受測者重量認定的參考依據。接著設計一套重量認知實驗，受測者觀看虛擬物件並對其產生一主觀重量認知，同時在實體砝碼中選擇其認定之重量。總共完成 90 位年齡介於 18~25 歲受測者的實驗，統計分析結果顯示表面材質的確強烈影響人類對於物件重量的認知，量化趨勢可作為產品設計時，虛擬原型製作與材質選擇的參考。

This research is focused on Material Weighted Illusion (MWI), which studies the influence of material texture on human weight perception. We constructed 3D models of three different textures using 3D modeling software and techniques of photorealistic computer graphics. Seven real objects of the same shape but different weights were created as a weight scale for human subjects to reflect their weight perceptions. A series of experiments was designed. A subject first determines a weight perception by receiving a visual stimulus. He or she then selects a weight among the seven reference objects as the corresponding value. Totally ninety subjects aged between 18 and 25 have completed the experiment. Analysis of the experimental data shows that the material texture significantly affects how people perceive the weight of a virtual object. The quantitative result of this work provides a basic guideline for material selection in prototyping of product design.