



## 背螢幕三維物件體感操作

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### 市場及需求：

手部體感操作能使操作者以更自然之方式與三維虛擬物件互動。然而，由於目前手部體感裝置設置於電腦顯示屏幕與操作者之間，而在視覺感知上，三維物件存在於顯示屏幕後方，因此操作時需假想被操作物體於顯示器前方以進行操作。此外，雖說屏幕中物件為三維，但礙於顯示器之限制，不易使操作者感受被操作物之立體感。

### 技術摘要(含成果)：

**背螢幕手部體感：**將手部體感裝置設置於顯示屏幕正後方，當操作者將雙手伸至屏幕後方時，即會於同空間中出現虛擬手掌，以模擬手部動作並可操作虛擬三維物件。**動態視角：**由攝影機追蹤頭部位置，依該位置對應虛擬實境中攝影機位置並改變投影視錐，以動態改變呈現正確視角。此外，更可藉此產生「運動視差」效果，由遠近物體間之相對位移，增進物件立體感。

### 優勢：

透過背螢幕設置與動態視角，更能降低虛擬與現實間之隔閡。使用者能假想將雙手直接伸入螢幕背後之虛擬環境，並直接與三維物件互動，並在移動視角時獲得正確視覺回饋，增進操作直覺性。

### 競爭產品：

易於直覺操作電腦中虛擬三維物體與探索虛擬實境，可協助電腦輔助設計、增進遊戲體驗。

### 專利現況：

專利申請中。

**聯絡方式(請不用填)：** 臺大產學合作總中心

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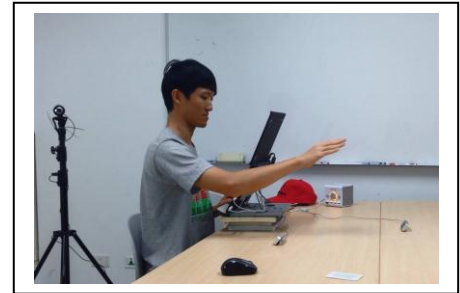


## Autonomous Steel Beam Assembly System (ABAS)

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### Market Needs:

Hand-based gestural control makes users manipulate virtual three-dimensional objects in an intuitive way. However, most existing control interfaces are located in front of the display. This requires users to imagine that manipulated objects that are actually behind the display exist in front of the display. The adaptation of this spatial coupling leads to negative after-effects of eye-hand coordination, which is important in gaming, design review, etc. Besides, even if virtual objects are in three dimensions, it is still difficult to present them using stereoscopy due to the limitation of flat displays.

### Our Technology:

**Rear-Screen Intersection:** In contrast to the front-screen setup, a motion control interface is located behind a display to track user's hand motion, coupling the actual interactive space with the perceived visual space. Virtual simulated hands are also constructed in the same dimension and position with real hands behind a display. **Kinesthetic Vision:** Kinesthetic Vision provides a dynamic perspective of virtual environments according to user's sight, by tracking the position of his/her head, in order to get correct perspective of objects and obtain depth perception using the motion parallax effect.

### Strength:

Using a simple physical setup with a laptop, a webcam and a motion control interface, users are able to enter their hands into the virtuality behind a display and interact with virtual objects intuitively and efficiently, enhancing user experience for gaming and design review.

### Competing Products:

The patent is a new technique in the market of the USA.

### Intellectual Properties:

Patent applying

### Contact (do not need to fill out):

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