



基於穿戴式魚眼影像之全身身體動作及手勢動作偵測技術

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市場及需求：

1. 應用於頭戴式顯示螢幕(如：Oculus Rift)
2. 應用於穿戴式動作紀錄

技術摘要(含成果)：

我們提出基魚眼攝影機的穿戴式裝置，透過將魚眼相機穿戴於身上，利用其超廣角視野，實現全身動作識別以及手部動作辨識。使用者僅需要穿戴單一元件。

優勢：

目前要實現身體動作辨識包括兩種方法，其一為使用外部攝影機，實現影像型動作辨識（例如，使用深度攝影機 Kinect），其二為使用穿戴式設備，在身上各部位穿戴多個動作感測器（例如，穿戴加速度計於身體多個部位）。前者，使用者的活動範圍將受限於攝影機的視野範圍。後者，使用者必須在全身穿戴感應器，增加了使用的麻煩。我們提出的使用魚眼攝影機作為穿戴式設備，透過其超廣角視野，實現全身性動作及手部動作姿態辨識。使用者僅需要穿戴單一元件。

競爭產品：HTC Vive (Tracking Tech), Leap Motion, Oculus VR (Tracking Tech)

專利現況：

過去在學術上，已有將攝影機穿戴在胸前或手腕上，實現手勢輸入功能。然而，過去研究多強調將攝影機安置於身體特定位置，可實現該部位的身體動作。例如，安置於手腕上，則可辨識手勢動作。我們使用超廣角視野的特性，安置於胸前的攝影機，即可達到全身性動作姿態辨識（包含使用者的腿部動作），而非僅限於身體特定部位。

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Full-Body and Hand Gesture Recognition Using Wearable Fisheye Images

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Experience:

<https://graphics.csie.ntu.edu.tw/~robin/>

Market Needs:

1. For applications of head mounted displays (e.g., Oculus Rift)
2. For applications of full-body and hand gesture recognition with wearable interfaces

Our Technology:

We present a single-piece wearable device that sees its user's whole body postures through an ego-centric view of the user that is obtained through a fisheye lens at the center of the user's body, allowing it to see only the user's limbs and interpret body postures effectively.

Strength:

Unlike currently available body gesture input systems that depend on external cameras or distributed motion sensors across the user's body, the proposed technology is a single-piece wearable device that is worn as a pendant or a badge. Owing to the ego-centric view, the proposed technology can turn posture recognition into a highly controllable computer vision problem.

Competing Products: HTC Vive (Tracking Tech), Leap Motion, Oculus VR (Tracking Tech)

Intellectual Properties:

Body-mounted cameras for monitoring gestural interactions have been extensively studied. Previous research has demonstrated that locating cameras at various positions on the body enables unique interactions. In this work, we are able to enable full-body interactions using a single-piece wearable device – a fisheye camera positioned at users' chest.

Contact (do not need to fill out):

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