Optical See-Through Smart Glasses Driven by Gesture Recognition

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Smart glasses have become a major research interest in the field of wearable devices because of their vast potential applications. Currently most commercially available smart glasses products do not provide a satisfactory Augmented Reality (AR) experience and are not user-friendly due to complicated operation procedures. The smart glasses system I developed has gesture recognition capability, which offers a more humanized approach. My solution to finger locating is to separate the hand from the background using depth data, to pinpoint the position of the finger, and then to synchronize it with the mark on the lens by positional correlation set by calibration. I developed an algorithm for the calibration of the see-through system via conversion between 3D coordinate systems. Another major innovation of my smart glasses system is an enhanced AR experience. Powered by natural feature-based image identification and the calibration algorithm, my system provides a 3D dynamic augmented reality experience without using QR codes. This smart glasses system offers much easier user control functionality and a superior AR experience as compared to many currently commercially available smart glasses products.

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