# Holographic multiplane augmented reality head-up display

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Augmented reality head-up display (AR-HUD) systems utilizing computer-generated hologram technology have emerged as a focal point of optical innovation. Traditional display systems often rely on arrays of projectors or multiple spatial light modulators (SLMs) for multi-depth projection; thus, these systems are typically complex and expensive. To address these challenges, the present study developed a miniaturized AR-HUD system that integrates an advanced driver assistance system (ADAS) with holographic display technology. By leveraging a single SLM for spatial multiplexing, this AR-HUD system achieves a streamlined design, enhancing real-time data visualization and situational awareness. The proposed AR-HUD system has a simple architecture and relatively low costs, and it advances driving safety and convenience by dynamically adjusting the depth of holographic images through deep learning techniques.

Short biography:

Chih-Hao Chuang is an assistant professor in the Department of Photonics at Feng Chia University. He completed his PhD studies in photonics and optoelectronics at National Taiwan University. His research interests include optical & digital holography, projection optical systems, diffractive optics, and image quality assessment for 2D&3D displays.