Glanceability in Augmented Reality Systems

VTIP 21-003: "Methods for Interacting with Glanceable Information in Wearable Augmented Reality Systems"

THE CHALLENGE

All-day wearable augmented reality (AR) devices, particularly smart glasses, will be increasingly available in the near future, revolutionizing the way people live and work. Impediments limiting further adoption are not only limited to hardware, but also to insights surrounding presentation and interaction with virtual information.

OUR SOLUTION

Glanceable methods for viewing and interacting with virtual information in wearable augmented reality displays including smart glasses have been developed by the Bowman lab at Virginia Tech. This glanceable AR technology, based on head and eye tracking, allows information acquisition via quick glances at the periphery of the visual field, allowing for unobtrusive display of information together with quick intake. These methods confer the advantages of not interfering with the user's view of or interaction with the real world. They can be used in scenarios where users are stationary, moving, or engaged in activities that require both hands.
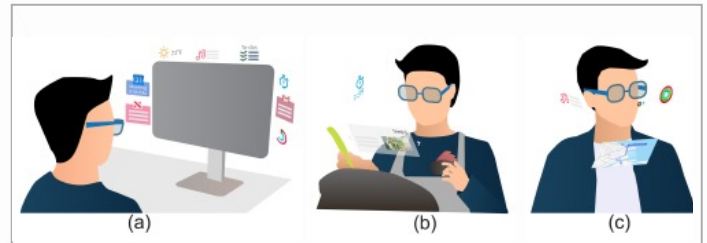
Using Glanceable AR interface in 3 everyday scenarios: (a) working in front of a desktop computer with glanceable widgets residing at the edge of the physical monitor; (b) cooking with recipe and timer following the user for hands-free access of information; (c) walking outside with music, fitness and map widgets following the user.
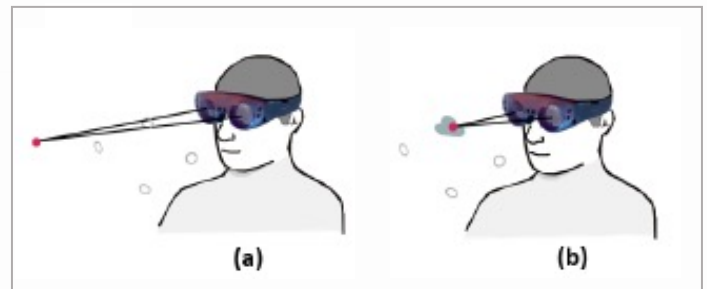
An illustration of the fixation glance technique: (a) widgets are represented as small targets to avoid occluding the user's view when the user is looking at the real-world environment behind the target; (b) when the user converges their gaze at the depth of the target, the widget expands and appears.

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