The Use of Gaze to Control Drones

This paper presents an experimental investigation of gaze-based control modes for unmanned aerial vehicles (UAVs or "drones"). Ten participants performed a simple flying task. We gathered empirical measures, including task completion time, and examined the user experience for difficulty, reliability, and fun. Four control modes were tested, with each mode applying a combination of x-y gaze movement and manual (keyboard) input to control speed (pitch), altitude, rotation (yaw), and drafting (roll). Participants had similar task completion times for all four control modes, but one combination was considered significantly more reliable than the others. We discuss design and performance issues for the gaze-plus-manual split of controls when drones are operated using gaze in conjunction with tablets, near-eye displays (glasses), or monitors.

General information
Publication status: Published
Organisations: Technology and Innovation Management, Department of Management Engineering, IT University of Copenhagen, York University Toronto
Pages: 27-34
Publication date: 2014

Host publication information
Title of host publication: Proceedings of the Symposium on Eye Tracking Research and Applications, ETRA 2014
Publisher: Association for Computing Machinery
ISBN (Print): 978-1-4503-2751-0
Keywords: Drones, UAV, Gaze interaction, Gaze input, Multimodality, Mobility, Head-mounted displays, Augmented or mixed reality systems, Video gaming, Robotics
DOIs:
10.1145/2578153.2578156
Source: dtu
Source ID: u::10934
Research output: Chapter in Book/Report/Conference proceeding › Article in proceedings – Annual report year: 2014 › Research › peer-review