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Midair Displays: Exploring the Concept of Free-Floating Public Displays

Abstract. Due to advances in technology, displays could replace literally any surface in the future, including walls, windows, and ceilings. At the same time, midair remains a relatively unexplored domain for the use of displays as of today, particularly in public spaces. Nevertheless, we see large potential in the ability to make displays appear at any possible point in space, both indoors and outdoors. Such displays, that we call midair displays, could control large crowds in emergency situations, they could be used during sports for navigation and feedback on performance, or they could be used as group displays which enable information to be brought to the user anytime and anywhere. We explore the concept of midair displays and show that with current technology, for example copter drones, such displays can be easily built.

Prototype of the mid-air display:
An iPad attached to an octocopter with 8 rotors

Midair display

A basic version of a mid-air display would consists of a drone and a small eInk display. Nowadays, drones can carry up to 3.5 kg of payload and fly at 40 km/h which is enough for a 60" eInk display. We envision different form factors such as cylindrically or planar displays.

Prototype

- iPad attached to n octocopter
- DC motors powered by two 5800mAh lipo batteries
- 8 rotors in coaxial shape
- Can be controlled manually or automatically

Future Work

- Attaching sensors such as a camera or distance sensors to track users in front of the display
- Replace the iPad with eInk display to reduce weight and, thus, increase flight time

Sports Display

- Provides information about user`s performance and surroundings
- Route information

Crowd Control / Emergency

- Leading the crowd efficiently out of the endangered area
- Independent infrastructure that works during power outtakes
- Provides visual and acoustic feedback

Personal / Group Information Display

- Provides information to a group of users at the same time
- Allows providing information during sightseeing

Concept of mid-air display (top left) and three potential use-cases.

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