Obstacle-Avoidance and Path Visualisation in Urban Air Mobility

Background

In the context of emerging Urban Air Mobility (UAM), the question arises as to what information passengers need while traveling in an automated air taxi. Especially during bad weather conditions when the sight is poor, the visualization of obstacles and other flying taxis will be crucial in order to increase the passengers' trust in UAM and raise their understanding of the operating algorithm.

One can divide these obstacles into two groups. On the one hand, predictable obstacles, such as buildings and other air traffic. On the other hand, unpredictable obstacles such as wind gusts or flocks of birds. The latter can cause the vehicle to suddenly change its route and unintentionally surprise the passenger.

Research question

This thesis aims to test different kinds of obstacle-avoidance visualization during bad weather conditions in Urban Air Mobility. Furthermore, investigations should be conducted regarding path visualizations of the own vehicle and other vehicles in order to support the passenger's mental model of the flying urban traffic. A prototype should be designed and implemented in VR that investigates the concepts mentioned above in a user study.

Based on bachelor/master level, the scope will be adapted.

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Research interest

Urban Air Mobility
HCI in future mobility

Focus in this project

VR Simulation of UAM
Design of new visualizations
Conducting a user study