Integration and Visualization of Flight Parameters for Simulated Helicopter Operations on a Future-Proof Helmet Mounted Display

Background:
A challenging aspect of helicopter emergency medical service (HEMS) operations is to navigate and land the helicopter in a confined area, because of limited space, fast changing weather conditions and unknown terrain. To reduce pilot workload, increase situational awareness and finally flight safety during the phases of navigation, descent, and landing maneuver, a pilot fitted presentation of the outside world events and helicopter parameters are required.

Scope of Work:
This thesis aims to integrate a 2 and 3 dimensional heads-up visual augmentation of helicopter parameters based on the different phases of flight in the Rotorcraft Simulation Environment (ROSIE). For the Human Machine Interface (HMI) design and integration, a future-proof Helmet Mounted Display with see-through capabilities, named as the Hololens2, is offered for the work. Needed information for the pilot-in-the-loop investigations will be developed together with pilots and test pilots. The integration and design may also lead to a simulator test campaign together with those pilots.

Skills:
1. Knowledge of C++ und Python
2. Experience with Unity is an advantage
3. Basic knowledge in Helicopter flight physics is an advantage

Tools:
Hololens2, Flight Simulator

Language:
German or English

Start:
Flexible

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Figure: Pilot using a Head-Mounted Display (HMD) in flight (from Maibach, DLR, DLRK 2020)