

Abstract

The thesis presents an innovative swarm control concept for unmanned aerial vehicles (UAVs), incorporating a holistic approach that includes flying units, a graphical environment, internal communication, and a control program. The goal was to create a universal solution based on both existing and proprietary technologies that can be applied in various industrial sectors. Innovative communication protocols are introduced, such as a proprietary protocol for data exchange between swarm units, as well as widely used technologies like MAVLink, which enable flexible integration with control systems. The work provides new solutions in the field of swarm control, taking into account the rapidly evolving field of artificial intelligence, and can serve as a foundation for future research and practical implementations. The results of the study confirm the effectiveness of the proposed approach in various mission scenarios, offering a flexible and scalable tool for many areas of UAV technology.