Abstract. This paper presents a novel Aerial Object Tracking System for crowd detection in small-scale indoor environments, utilizing micro quadrotor drones equipped with high-resolution cameras and advanced computer vision algorithms. The significance of this work addresses a significant problem in the field of surveillance and crowd monitoring, especially during public health crises. The integration of micro quadrotor drones and advanced computer vision techniques offers a unique and innovative solution for real-time crowd detection and tracking. The research findings and insights are expected to be of interest to readers in various fields, including computer vision, unmanned aerial systems, crowd monitoring, and surveillance. Professionals in public safety, event management, and security industries can benefit from the proposed system's capabilities for efficient crowd monitoring using drones. The aim of this paper is to show the application of drones from the air object tracking system for crowd detection in a small-scale area. The report also proposes alternative solutions based on the use of micro quadrotor drones equipped with cameras on board. In addition, images are transmitted and processed in mobile applications to provide more information about the object. Several experiments show that the system has been effectively installed and provides data collection for further research. The results showed that the system could be used for small-scale air monitoring.