

A METHOD FOR CONTROLLING A GROUP OF UNMANNED AERIAL VEHICLES TO PROVIDE EMERGENCY ROOMS WITH ESSENTIAL GOODS BASED ON THE USE OF AN ANT ALGORITHM

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The main stages in the development of modern society are informatization and robotization, the application of which has made changes to the logistics system. The characteristic features of the development of such a system include the following: automated collection, processing, storage, transmission and use of information based on the use of information technology. Given the trends in the development of unmanned aerial vehicles and the wide range of their applications, the key area for improving the logistics system in Ukraine is the development of logistics infrastructure using various types of unmanned aerial vehicles.

Thus, the development of a method for controlling a group of unmanned aerial vehicles to provide emergency rooms with essential goods based on the ant algorithm is an urgent scientific task.

The report proves that the use of group technologies of unmanned aerial vehicles (UAVs) will help solve logistics issues in Ukraine, reducing financial costs and increasing the speed and reliability of cargo delivery, which will increase the overall efficiency of the emergency system. For the UAV group to work together, it is important to develop a routing system based on the choice of algorithms for finding minimum routes and their software implementation. The features of the application of multiple ant algorithms for solving the problem of logistics of emergency centers in the group use of cargo UAVs are shown. The problem statement for the multiple transportation problem for the emergency care system is made. The features of its solution by ant algorithms are considered. The advantages of the solution by dividing the total coverage space of the emergency system into non-overlapping subspaces are shown. The basic types and algorithms of distribution are considered and analyzed. It is shown that it is more reasonable for multiple transportation problems to divide the coverage space into non-overlapping subspaces and find solutions for each subspace using standard ant algorithms. A method for managing a group of UAVs to provide emergency departments with essential goods based on an ant algorithm has been developed.

References:

1. Коломійцев О.В., Комаров В.О., Катунін А.М., Колодій О.П., Помогаєв І.В., Сапон В.І., Кравченко В.Л., Рудаков І.С., Бесова А.О., Мосійчук А.М. Пропозиції щодо розробки програмного забезпечення для виявлення людей на цифрових аерофотознімках та потоковому відео комп'ютерного зору безпілотної літального апарату. *ГРААЛЬ НАУКИ: міжнар. наук. журнал*. – Вінниця: ГО "Європейська наукова платформа"; НУ «Інститут науково-технічної інтеграції та співпраці», 2024. – No 45. – С. 411-420. DOI 10.36074/grail-of-science.01.11.2024.