本科摘要：

**基于果蝇优化算法的无线传感器网络覆盖优化**

**摘 要**

随着5G通信技术的商用与物联网应用的普及，无线传感器网络覆盖优化问题越来越受到学者的关注。本文研究了一种基于果蝇优化算法的无线传感器网络覆盖优化方法。该方法通过将果蝇的行为转化为数学模型，并将问题转化为目标函数的优化问题，实现了对无线传感器网络的覆盖优化,主要的研究重点在无线传感器节点的部署位置上的选择方面。本文的目标是通过果蝇优化算法寻找最佳的节点部署位置的选择方案，以实现最小化节点数和最大化覆盖率的双重目标。

本文主要研究了以下几点：首先，研究了果蝇优化算法，包括算法的原理、步骤和特点等，其次对传感器网络覆盖的基本问题展开了研究，包括无线传感器网络覆盖的原理、节点的感知模型等；接着将果蝇优化算法用于无线传感器网络覆盖优化，该方法克服了传统优化算法在复杂环境下的缺陷，具有算法简单，鲁棒性强等优点。仿真实验显示，本文引入的方法在实验中取得了较好的效果，为解决无线传感器网络覆盖问题提供了一种有效的解决方案。

**关键词：无线传感器网络；果蝇优化算法；覆盖优化；适应度函数**

**Coverage optimization of wireless sensor networks based on drosophila optimization algorithm**

**Abstract**

With the commercialization of 5G communication technology and the popularity of IoT implementations, the problem of coverage optimization of wireless sensor networks has received more and more attention from academics. In this paper, a wireless sensor network coverage optimization method based on the fruit fly optimization algorithm is investigated. The method enables to optimise the coverage of wireless sensor networks by changing the behaviour of fruit flies into a mathematical model and converting the problem into an optimisation problem with an objective function. The research mainly focuses on the selection of wireless sensor nodes in terms of their location. The objective of this paper is to find the optimal choice of node deployment locations using a fruit fly optimization algorithm to achieve the dual objectives of minimizing the number of nodes and maximizing the coverage.

This paper focuses on the following points: firstly, the fruit fly optimization algorithm is studied, including the principle, steps and characteristics of the algorithm, etc. Secondly, the basic problems of sensor network coverage are investigated, including the principle of wireless sensor network coverage, the perception model of nodes, etc.; then the fruit fly optimization algorithm for wireless sensor network coverage optimization is used, which overcomes the shortcomings of traditional optimization algorithms in complex environments and has the advantages of a simple algorithm and high robustness. Simulation experiments show that the method presented in this paper obtains better results in the experiments and provides an effective solution to solve the coverage problem of wireless sensor networks.

**Key words: Wireless Sensor Networks; Drosophila Optimization Algorithm; Coverage Optimization; Adaptability Function**

存在的问题：

1. **句子结构复杂：**

原句：该方法通过将果蝇的行为转化为数学模型，并将问题转化为目标函数的优化问题，实现了对无线传感器网络的覆盖优化。

句式杂糅，读起来不通顺

1. 重复信息过多：多次提到无线传感器网络覆盖优化的问题，可以简化和合并相关信息。使摘要更通顺
2. 部分信息细节阐述太多，可以详略得当：摘要应简洁明了，某些细节可以简化，如对感知模型的详细说明可以省略。
3. 结构不够紧凑：摘要应追求紧凑流畅，可以通过合并一些相关内容使其更为流畅。
4. 摘要部分英文部分翻译不准确：如The method enables to optimise the coverage of wireless sensor networks by changing the behaviour of fruit flies into a mathematical model and converting the problem into an optimisation problem with an objective function.句式复杂，且不能正确还原原意。

改进后摘要：

**基于果蝇优化算法的无线传感器网络覆盖优化**

**摘 要**

随着5G通信技术的商用与物联网应用的普及，无线传感器网络覆盖优化问题越来越受到关注。本文研究了一种基于果蝇优化算法的无线传感器网络覆盖优化方法。该方法通过数学模型化果蝇行为，并将其转化为目标函数优化问题，从而优化无线传感器网络的覆盖。研究重点在于节点部署位置的选择，以实现最小化节点数和最大化覆盖率的双重目标。本文首先探讨了果蝇优化算法的原理、步骤和特点，然后研究了传感器网络覆盖的基本问题，最后将果蝇优化算法应用于无线传感器网络覆盖优化。仿真实验表明，该方法在实验中取得了较好的效果，提供了一种有效的解决方案。

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**Coverage optimization of wireless sensor networks based on drosophila optimization algorithm**

**Abstract**

With the commercialization of 5G communication technology and the rise of IoT applications, the coverage optimization of wireless sensor networks has gained significant attention. This paper investigates a coverage optimization method for wireless sensor networks based on the fruit fly optimization algorithm. By mathematically modeling the behavior of fruit flies and converting it into an optimization problem, this method aims to optimize network coverage. The focus is on selecting the optimal deployment locations for sensor nodes to minimize the number of nodes while maximizing coverage. The paper first explores the principles, steps, and characteristics of the fruit fly optimization algorithm, followed by a study on the basics of sensor network coverage. Finally, the algorithm is applied to optimize the coverage of wireless sensor networks. Simulation experiments show that the proposed method achieves better results and provides an effective solution for network coverage issues.

**Key words: Wireless Sensor Networks; Drosophila Optimization Algorithm; Coverage Optimization; Adaptability Function**

**总结：**通过以上改进，摘要在信息传达上更为简洁、明确，同时保留了必要的细节以展现研究的深度和广度。这样可以更有效地传递关键信息，提升可读性和专业性。