# Article information:

Multi-robot patrol: A distributed algorithm based on expected idleness - Chuanbo Yan, Tao Zhang, 2016  
<https://journals.sagepub.com/doi/10.1177/1729881416663666>

# Article summary:

1. Multi-robot systems are more competent for patrolling due to spatial distribution, scalability, and fault tolerance.

2. The multi-robot patrol problem can be abstracted into a topological map and is measured by the time interval between two visits to the same position (idleness).

3. The proposed distributed algorithm based on expected idleness estimates idleness with shared information through distributed communication and offers fault tolerance and scalability for the robot team.

# Article rating:

Appears moderately imbalanced: The article provides some useful information, but is missing several important points or pieces of evidence that would be required to present the discussed topics in a balanced and reliable way. You are encouraged to seek a more balanced perspective on the presented issues by exploring the provided research topics and looking at different information sources.

# Article analysis:

该文章提出了一个基于期望空闲时间的分布式算法，旨在提高多机器人巡逻任务的效率，并保持容错性和可扩展性。然而，该文章存在一些潜在的偏见和局限性。

首先，该文章只关注频率巡逻问题，而没有考虑到其他类型的巡逻问题。这可能导致作者对多机器人巡逻问题的理解不够全面。

其次，该文章将多机器人巡逻问题与车辆路径规划问题联系起来，并认为它们具有相似之处。然而，这种类比可能过于简单化，并忽略了两个问题之间的本质区别。

此外，该文章只讨论了分布式算法和集中式算法之间的优缺点，并没有探讨它们之间可能存在的折衷方案。这可能导致读者对多机器人巡逻问题的解决方案有所误解。

最后，该文章没有充分考虑到多机器人巡逻任务中可能存在的风险和挑战。例如，在实际应用中，机器人可能会遭受攻击或干扰，从而影响其执行任务的能力。因此，在设计算法时需要考虑到这些潜在风险并采取相应措施。

总之，虽然该文章提出了一个基于期望空闲时间的分布式算法来解决多机器人巡逻问题，但它存在一些潜在的偏见和局限性。因此，在实际应用中需要更加全面地考虑多种因素，并采取相应措施来确保任务的顺利执行。

# Topics for further research:

* Other types of patrol problems
* Essential differences between patrol and vehicle routing problems
* Compromise solutions between distributed and centralized algorithms
* Risks and challenges in multi-robot patrol tasks
* Comprehensive consideration of multiple factors in practical applications
* Measures to ensure the smooth execution of tasks.

# Report location:

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