# Article information:

Obstacle Avoidance and Tracking Control of Redundant Robotic Manipulator: An RNN-Based Metaheuristic Approach | IEEE Journals & Magazine | IEEE Xplore  
<https://ieeexplore.ieee.org/document/8840875>

# Article summary:

1. This article presents a metaheuristic-based control framework for simultaneous tracking control and obstacle avoidance of a redundant manipulator.

2. The proposed framework unifies the tracking control and obstacle avoidance into a single constrained optimization problem by introducing a penalty term into the objective function.

3. A metaheuristic-based RNN, BAORNN, is proposed to efficiently solve the formulated optimization problem so that the manipulator can be controlled in real time.

# Article rating:

May be slightly imbalanced: The article presents the information in a generally reliable way, but there are minor points of consideration that could be explored further or claims that are not fully backed by appropriate evidence. Some perspectives may also be omitted, and you are encouraged to use the research topics section to explore the topic further.

# Article analysis:

The article “Obstacle Avoidance and Tracking Control of Redundant Robotic Manipulator: An RNN-Based Metaheuristic Approach” provides an overview of a metaheuristic-based control framework for simultaneous tracking control and obstacle avoidance of a redundant manipulator. The authors present their proposed approach as an efficient solution to the problem of controlling robotic manipulators in complex environments with obstacles present in the environment.

The article is well written and provides detailed information on the proposed approach, including its theoretical background, implementation details, and simulation results. The authors provide evidence for their claims through simulations using an LBR IIWA seven-DOF manipulator, which demonstrates the performance of their proposed algorithm.

However, there are some potential biases in this article that should be noted. First, while discussing traditional approaches to obstacle avoidance, the authors focus mainly on methods based on artificial force fields or depth sensors without providing any counterarguments or alternative approaches to these methods. Additionally, while discussing their own approach they do not provide any comparison with existing methods or discuss any potential drawbacks or limitations of their method compared to other approaches. Furthermore, while discussing their proposed algorithm they do not mention any possible risks associated with it such as safety concerns or potential failure scenarios that could arise from its use in real world applications.

In conclusion, this article provides an interesting overview of a metaheuristic-based approach for controlling robotic manipulators in complex environments with obstacles present in the environment. However, there are some potential biases that should be noted such as lack of comparison with existing methods and lack of discussion about possible risks associated with its use in real world applications.

# Topics for further research:

* Artificial Force Field Obstacle Avoidance
* Depth Sensor Obstacle Avoidance
* Comparison of Obstacle Avoidance Methods
* Safety Concerns of Robotic Manipulators
* Potential Failure Scenarios of Robotic Manipulators
* Metaheuristic-Based Control Framework for Robotic Manipulators

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