# Article information:

RNN for Receding Horizon Control of Redundant Robot Manipulators | IEEE Journals & Magazine | IEEE Xplore
<https://ieeexplore.ieee.org/document/9369130>

# Article summary:

1. This article proposes a receding horizon control (RHC) scheme for the trajectory tracking of redundant manipulators, which minimizes tracking error, velocity norm, and acceleration norm while directly considering joint limits at three levels.

2. A recurrent neural network (RNN) model is designed for the constructed RHC scheme to obtain its online solution.

3. Simulation and experiment results show that the proposed RHC scheme solved by the RNN model is able to make the redundant manipulator track the given trajectory excellently and is superior to other existing schemes and solvers in terms of high efficiency, quick-response capacity, and strong robustness.

# 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 “RNN for Receding Horizon Control of Redundant Robot Manipulators” provides an overview of a receding horizon control (RHC) scheme for the trajectory tracking of redundant manipulators with a recurrent neural network (RNN) model used to obtain its online solution. The article presents a comprehensive review of related research on redundant manipulators, RHC, and RNNs as well as simulation and experiment results showing that the proposed RHC scheme solved by the RNN model is able to make the redundant manipulator track the given trajectory excellently and is superior to other existing schemes and solvers in terms of high efficiency, quick-response capacity, and strong robustness.

The article appears to be reliable overall; however, there are some potential biases that should be noted. For example, there is no discussion or exploration of counterarguments or alternative solutions that could be used instead of or in addition to the proposed RHC scheme with an RNN model. Additionally, there is no mention of possible risks associated with using this approach such as potential safety issues or unintended consequences from using this technology in real-world applications. Furthermore, it should also be noted that while simulation and experiment results are presented showing that this approach works well in certain scenarios, it may not work as well in others due to factors such as environmental conditions or system complexity which were not discussed in detail in this article.

In conclusion, while this article provides an interesting overview of a promising approach for controlling redundant robot manipulators using receding horizon control with an RNN model for online optimization solutions, further research should be conducted into potential biases or missing points of consideration before implementing this technology in real-world applications.

# Topics for further research:

* Alternative solutions for redundant robot manipulators
* Safety issues associated with RHC and RNN
* Environmental factors affecting RHC and RNN
* System complexity and RHC and RNN
* Counterarguments to RHC and RNN
* Unintended consequences of RHC and RNN

# Report location:

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