# Article information:

Joint Modeling and Closed-Loop Control of a Robotic Hand Driven by the Tendon-Sheath | IEEE Journals & Magazine | IEEE Xplore  
<https://ieeexplore.ieee.org/abstract/document/9488224>

# Article summary:

1. This article presents a tendon-sheath transmission-based robotic hand with decoupling joint design and high-precision closed-loop control strategy.

2. The nonlinear joint transmission model is established, and an adaptive controller with neural network compensation is designed to realize the high-precision joint control.

3. Simulation and experiment results show that the proposed closed-loop control strategy can significantly improve the joint control accuracy.

# 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 “Joint Modeling and Closed-Loop Control of a Robotic Hand Driven by the Tendon-Sheath” is a well written and comprehensive overview of the current state of robotic dexterous operation. The authors provide a detailed description of their proposed tendon-sheath transmission based robotic hand, as well as its nonlinear joint transmission model and adaptive controller with neural network compensation for high precision joint control. The simulation and experiment results are presented in detail, showing that the proposed closed loop control strategy can significantly improve the joint control accuracy.

The article appears to be reliable in terms of its content, as it provides detailed information on the design of the robotic hand, its nonlinear joint transmission model, and its adaptive controller with neural network compensation for high precision joint control. Furthermore, it provides evidence from simulations and experiments to support its claims about improved accuracy in joint control.

However, there are some potential biases in this article that should be noted. For example, while it does mention other methods for driving robotic hands such as pneumatic drive, hydraulic drive, functional material drive, etc., it does not provide any comparison between these methods and its own proposed method using tendon-sheath transmissions. Additionally, while it does mention possible risks associated with using tendon-sheath transmissions (such as limited ability to increase torque), it does not explore these risks in depth or discuss potential solutions or counterarguments to them. Finally, while this article is comprehensive in terms of describing its own proposed method for driving robotic hands using tendon-sheath transmissions, it does not provide any discussion on other potential applications or implications of this technology beyond robotics research.

# Topics for further research:

* Pneumatic drive robotic hands
* Hydraulic drive robotic hands
* Functional material drive robotic hands
* Tendon-sheath transmission risks
* Increasing torque with tendon-sheath transmissions
* Applications of tendon-sheath transmissions beyond robotics

# Report location:

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