# Article information:

Composite Learning Finite-Time Control of Robotic Systems With Output Constraints | IEEE Journals & Magazine | IEEE Xplore  
<https://ieeexplore.ieee.org/document/9744335>

# Article summary:

1. This article presents a composite learning finite-time control scheme for robotic systems with uncertain dynamics and time-varying asymmetric output constraints.

2. The proposed control scheme benefits from two design steps: a modified nonsingular terminal sliding mode-based composite learning controller is adopted to ensure both tracking error and parameter estimation error converge to zero in finite time without singularity, while a universal time-varying asymmetric barrier function (UTABF) is used to directly constrain the system output.

3. Both theoretical analysis and experiments results on an industrial manipulator confirm the benefits and effectiveness of the proposed control scheme.

# Article rating:

Appears well balanced: The article presents the information in a reliable and balanced way, without biases and prejudices. The claims made in the article are well supported and, where applicable, all sides of the argument are given opportunity to present their point of view. The article appears trustworthy and reliable.

# Article analysis:

The article “Composite Learning Finite-Time Control of Robotic Systems With Output Constraints” provides an overview of a novel composite learning finite-time control (CLFTC) scheme for robotic systems subject to asymmetric time-varying output constraints. The article is well written and provides detailed information about the proposed CLFTC scheme, its advantages, and its experimental results on an industrial manipulator.

The article does not appear to be biased or one-sided in its reporting, as it provides a comprehensive overview of existing methods for controlling robotic systems with uncertain dynamics and time-varying asymmetric output constraints, as well as their limitations. It also presents the proposed CLFTC scheme in detail, including its salient features such as the modified excitation matrix, modified nonsingular TSM (NTSM)-based composite learning finite-time controller, and universal time-varying asymmetric barrier function (UTABF).

The article does not appear to make unsupported claims or omit any points of consideration; rather, it provides detailed information about existing methods for controlling robotic systems with uncertain dynamics and their limitations, as well as evidence for the claims made regarding the proposed CLFTC scheme. Furthermore, it presents both theoretical analysis and experimental results on an industrial manipulator that demonstrate the effectiveness of the proposed CLFTC scheme.

The article does not appear to contain any promotional content or partiality; rather, it provides an objective overview of existing methods for controlling robotic systems with uncertain dynamics and their limitations, as well as evidence for the claims made regarding the proposed CLFTC scheme. Additionally, possible risks associated with using this method are noted in the article.

In conclusion, this article appears to be trustworthy and reliable in terms of providing an

# Topics for further research:

* Robotic System Control
* Output Constraints
* Modified Excitation Matrix
* Modified Nonsingular TSM-Based Composite Learning Finite-Time Controller
* Universal Time-Varying Asymmetric Barrier Function
* Robotic System Control with Uncertain Dynamics

# Report location:

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