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Robust finite time stabilization analysis for uncertain neural networks with leakage delay and probabilistic time-varying delays. (English) [Zbl 1347.93222](#)

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Summary: This paper investigates the problem of robust finite time stabilization for a uncertain neural networks with leakage delay and probabilistic time-varying delays. By introducing a stochastic variable which satisfies Bernoulli distribution, the information of probabilistic time-varying delay is equivalently transformed into the deterministic time-varying delay with stochastic parameters. The main objective of this paper is to design a memoryless state feedback control such that the resulting proposed system is robustly finite time stable with admissible uncertainties. Based on a suitable Lyapunov-Krasovskii functional, model transformation technique and Wirtinger-based double integral inequality, the general framework is obtained in terms of linear matrix inequalities to determine the finite time stability and to achieve the control design. Finally, three numerical examples are presented to validate the effectiveness and less conservatism of the proposed method.

MSC:

[93D21](#) Adaptive or robust stabilization

[92B20](#) Neural networks for/in biological studies, artificial life and related topics

[93C41](#) Control/observation systems with incomplete information

[93B17](#) Transformations

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Keywords:

[robust finite time stabilization](#); [uncertain neural networks](#); [deterministic time-varying delay with stochastic parameters](#)

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