Summary: This work explores the discrete-time state feedback control problem for neutral stochastic delay systems (NSDSs) in which coefficients satisfy highly nonlinear. Due to the highly nonlinear, the neutral term and discrete time observation value, many conventional methods are not applicable. A more general Lyapunov function is constructed to prove that the designed controller can stabilize the corresponding systems. In addition, $H_\infty$-stable, asymptotically stable and exponentially stable of the corresponding studied systems are presented. Then, a numerical case is demonstrated to verify the correctness and validity of the proposed theoretical results.

MSC:
60Hxx Stochastic analysis
34Kxx Functional-differential equations (including equations with delayed, advanced or state-dependent argument)
93Exx Stochastic systems and control

Keywords:
neutral stochastic delay systems; $H_\infty$-stable; asymptotically stable; exponentially stable; Lyapunov function

Full Text: DOI

References:


[38] Mao, X.; Yuan, C., Stochastic Differential Equations With Markovian Switching (2006), Imperial College Press: Imperial College Press London · Zbl 1126.60004

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