

# Virtual Reference Feedback Tuning of MIMO Data-Driven Model-Free Adaptive Control Algorithms

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## Abstract

This paper proposes a new tuning approach by which all Model-Free Adaptive Control (MFAC) algorithm parameters are computed using a nonlinear Virtual Reference Feedback Tuning (VRFT) algorithm. This new mixed data-driven control approach, which results in a mixed data-driven tuning algorithm, is advantageous as it offers a systematic way to tune the parameters of MFAC algorithms by VRFT using only the input/output data of the process. The proposed approach is validated by a set of MIMO experiments conducted on a nonlinear twin rotor aerodynamic system laboratory of equipment position control system. The mixed VRFT-MFAC algorithm is compared with a classical

MFAC algorithm whose initial parameter values are optimally tuned.

## Keywords

Model-Free Adaptive Control   Optimization

Twin Rotor Aerodynamic System   Virtual Reference Feedback Tuning

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## Notes

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