A Different Approach to Optimize Fuzzy Membership Functions with Extended FIR Filter

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Abstract : The extended finite impulse response (EFIR) filter is addressed to optimize membership functions (MFs) of the fuzzy model that has strong nonlinearity. MFs are important parts of the fuzzy logic system (FLS) and, thus optimizing MFs of FLS is one of approaches to improve the performance of output. We employ the EFIR as an alternative optimization option to nonlinear fuzzy model. The performance of EFIR is demonstrated on a fuzzy cruise control via a numerical example.