H_2 Optimal Decoupling of Previewed Signals in the Discrete-Time Case.

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Abstract: The synthesis of a feedforward unit for H_2 optimal decoupling of measurable or previewed signals in discrete-time linear time-invariant systems is considered. It is shown that an H_2 optimal compensator can be achieved by connecting a finite impulse response (FIR) system and a stable dynamic unit. To derive the FIR system convolution profiles an easily implementable computational scheme based on pseudoinversion (possibly nested to avoid computational constraints) is proposed, while the dynamic unit is derived by solving a standard LQR problem, in general cheap or singular.

Keywords:

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