

A NONLINEAR PROGRAMMING TECHNIQUE TO COMPUTE THE REAL STRUCTURED SINGULAR VALUE

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ABSTRACT. We take a new look at the real structured singular value computation problem which is a popular tool for testing robustness of a system. Structured singular value computation is an NP hard problem and some software packages propose lower and upper bounds to it. The gap between the lower and upper bounds is large for many problems so that the benefit arising from its usage reduces. In this paper, we present the modified subgradient algorithm, a nonlinear programming technique that can handle a large class of nonconvex optimization problems and requires no differentiability to approximate the true value of real structured singular value.

Key words: robust control, real structured singular value, nonlinear programming, modified subgradient algorithm.