NEWS

New arXiv preprint on robust control systems design

24.07.2025 | In our new arXiv preprint, we give an expository account of the well-known LQG/LTR design problem for finite-dimensional SISO control systems. We discuss an approach which is based on the utilisation of weighting augmentation for incorporating design specifications into the framework of the LTR technique for LQG compensator design. The LQG compensator is to simultaneously meet given analytical low- and high-frequency design specifications expressed in terms of desirable sensitivity and controller noise sensitivity functions. The paper is aimed at nonspecialists and, in particular, practitioners in finite-dimensional LQG theory interested in the design of feedback compensators for closed-loop performance and robustness shaping of SISO control systems in realistic situations. The proposed approach is illustrated by a detailed numerical example: the torque control of a current-controlled DC motor with an elastically mounted rotor.

The paper is an outgrowth of our attempt to provide a theoretically well-founded, yet easy to follow procedure for systematic LQG compensator design with frequency-dependent design specifications.

Read more about the Infinite-Dimensional Systems group here.