Class: Sistem Pengaturan Berjaringan (EE185524)
Lecturer: Yurid E. Nugraha
Deadline: 2023/06/14

Assignment 6: Data Rate and Quantization Feedback

Problems 1–5 are based on Paper 1 on this link, whereas Problems 6–8 are based on Paper 2. (You may need other references to answer the questions)

1. Describe what 'mean-square sense' means in the context of this paper. For Theorem 4.1, at which value the states are expected to be at infinite time?
2. Explain clearly the meaning of the condition described in Theorems 4.1 and 5.1. What are the difference?
3. Describe how the quantizer processes the input signals in the scalar systems.
4. Explain how the results attempt to separate the stabilizable and the not stabilizable region. Can those regions be clearly separated?
5. Describe the contribution of the paper in detail. In which part of the system they contribute the most?
6. Describe what is meant by hybrid control mentioned in the title and why that model is considered.
7. Describe the 'zoom' variable on the quantizer and how it affects the quantization process.
8. What notion of stability is discussed for each of the linear and nonlinear model? Define all the stability terms used for this model and explain them in the context of this paper.