Class: Sistem Pengaturan Berjaringan (EE185524)
Lecturer: Yurid E. Nugraha
Deadline: 2023/03/01

Assignment 1: Characteristics of networked control systems

(You can answer with either English or Indonesian.)

Problems 1–7 are based on the survey paper by Joao Hespanha et al. (and the references therein) discussed in the lecture.

1. (**Weight: 15%**) Explain clearly why most of the problems considered in the paper is for a discrete-time system.
2. (**15%**) Describe several characteristics and issues of networks that can affect the design of control systems.
3. (**10%**) Explain why estimators may be needed in networked control systems (NCS). What are the most widely used estimators?
4. (**10%**) Explain why sampling might affect stability of NCS. Is large interval between sampling good for the system's stability?
5. (**5%**) Give an explanation of Delayed Differential Equation and how it can handle NCS using a continuous-time approach.
6. (**5%**) Describe some of the tools used to analyze systems with stochastic dropouts or samplings.
7. (**15%**) What are some issues of NCS that are not discussed in the paper? Give example of some other papers that discuss the mentioned issues.
8. (**25%**) Read a survey paper titled "Control methodologies in networked control systems" by Y. Tipsuwan and M.-Y. Chow. Make a summary on how this survey paper differs from the paper used in Problems 1–7 above.