Basic Control Engineering Fundamentals of Automatic Control

Auto 1: week 2 day 1

Objectives:

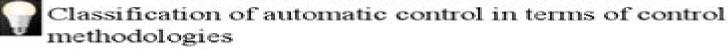
2. Various Automatic Controls

- classify systematically automatic control in terms of control methodologies
- 2.2 state what an optimal control means
- 2.3 explain briefly feedback control and feed-forward control

Basic Control Engineering

Fundamentals of Automatic Control

10



Feedback

- What is feedback?
- Information that tells you how you're doing
- Automatic controller uses feedback
- Difference between the Process Variable and the Set point (the the controller how well it's doing.
- The less the error, the better the performance
- Open loop control does not use feedback
- Example: timed lawn sprinkler system
 - · Even if it rains, the sprinkler turns on because it has no feedback that

Fundamentals Of Automatic Control

George Howard Farrington

Fundamentals Of Automatic Control:

Fundamentals of Automatic Control George Howard Farrington, 1951 Fundamentals of automatic control Robert Fundamentals of Automatic Process Control Uttam Ray Chaudhuri, Utpal Ray Chaudhuri, 2012-10-29 Strong theoretical and practical knowledge of process control is essential for plant practicing engineers and operators In addition being able to use control hardware and software appropriately engineers must be able to select or write computer programs that interface the hardware and software required to run a plant effectively Designed to help readers understand control software and strategies that mimic human activities Fundamentals of Automatic Process Control provides an integrated introduction to the hardware and software of automatic control systems Featured Topics Basic instruments control systems and symbolic representations Laplacian mathematics for applications in control systems Various disturbances and their effects on uncontrolled processes Feedback control loops and traditional PID controllers Laplacian analysis of control loops Tuning methods for PID controllers Advanced control systems Virtual laboratory software included on downloadable resources Modern plants require operators and engineers to have thorough knowledge of instrumentation hardware as well as good operating skills This book explores the theoretical analysis of the process dynamics and control via a large number of problems and solutions spread throughout the text This balanced presentation coupled with coverage of traditional and advanced systems provides an understanding of industrial realities that prepares readers for the future evolution of industrial operations Fundamentals of Automatic Control Someshwar C.. Gupta, Lawrence Hasdorff, 1995

Automation and Remote Control Someshwar C. Gupta, Lawrence L. Hasdorff, 1970-01-15 Fundamentals of Automation and Remote Control S. A. Ginzburg, I. Ya. Lekhtman, V. S. Malov, 2013-10-22 International Series of Monographs in Automation and Automatic Control Volume 7 Fundamentals of Automation and Remote Control describes the complex systems of automatic control and telecontrol This text is a translation from the second Russian edition This book contains descriptive material on the fundamentals of automation and remote control with attention to electrical components and systems Part I deals with the basic components of automation and remote control such as functions and general characteristics and electromechanical ferromagnetic and electronic and radioactive components The construction of automation systems that use radioactive isotopes is given as an example where the penetrating power of the radioactive radiation can measure the thickness of an object Part II discusses automation systems and describes the principles of stability analysis that are needed in the dynamics of automatic regulation and control follower and measuring systems A schematic diagram of an automatic speed regulator is analyzed in detail as an example Part III is a description of the many remote control systems that are used for example in signaling systems in telemetry systems and in command link systems. The importance of communication channels to remote control systems is also pointed out Long range signaling and telecontrol which uses selection methods to assign the correct signals are explained A diagram of a telecontrol unit with time

separation of signals is illustrated and the protection of the unit from employing distorted signals is explained Mechanical engineers technicians and students with serious interest in automatic control and telecontrol will find this book valuable

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