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communication systems: an introduction to signal noise in electrical communication

Carlson, A. Bruce

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Abstrak

This text, like its previous editions, is an introduction to communication systems written at a level appropriate for advanced undergraduates and first-year graduate students in electrical engineering. An initial study of signal transmission and the inherent limitations of physical systems establishes unifying concepts of communication. Equal attention is then given to the analysis and design of analog and digital communication systems. Mathematical techniques and models necessarily play an important role throughout the book, but always in the engineering context as the means to an end. Numerous applications have been incorporated for their practical significance and as illustrations of concepts and design strategies. Hardware considerations are also included to stimulate interest and to bring out connections with other branches of electrical engineering. The coverage of digital communication has been substantially increased in this edition, especially in the areas of spectral analysis, error-control coding, and carrier modulation. Other topics given expanded treatment are: filtering, random analysis, multiplexing, synchronization, coded pulse modulation, optimum detection, and information theory. New topics include: FM distortion, phase-lock loops, spread spectrum, predictive coding, discrete Fourier transforms, and hardware implementation using digital circuits.