Communication Engineering Chitode

This book gathers the best papers presented at the International Conference on Data Sciences, Security and Applications (ICDSSA 2019), organized by Bharati Vidyapeeth’s College of Engineering, New Delhi, India, on 7–8 March 2019. The respective contributions present original research work, essential information, techniques and applications in the fields of data mining, artificial intelligence and computational intelligence. They also discuss machine learning in business intelligence and big data analytics, soft computing, security, cloud computing and the latest trends.

De volgende Bill Gates zal geen besturingssysteem ontwerpen, en de nieuwe Mark Zuckerberg geen tweede Facebook. Het kopiëren van succesvolle modellen uit Silicon Valley heeft weinig zin. We kunnen wél leren van het vermogen om iets geheel nieuws te creëren in plaats van iets toe te voegen aan wat al bestaat. Peter Thiel is medeoprichter van PayPal en investeerder in vele techbedrijven, zoals Facebook, LinkedIn en Spotify. Dankzij zijn unieke ervaring en strategische inzichten heeft hij met Zero to one dé bijbel van een nieuwe generatie ondernemers geschreven. Zijn inzichten over onder andere strategie, teambuilding, concurrentie, verkoop en pitchen zijn breed toepasbaar. Een must read voor iedere ondernemer!

Voor de driejarige Pari is haar grote broer Abdullah meer een vader dan een broer. Voor de tienjarige Abdullah is zijn zusje alles. Als Pari noodgedwongen wordt verkocht aan een rijk maar kinderloos echtpaar in Kabul zet dat een reeks gebeurtenissen in gang die een ontroerend en onthutsend beeld geven van de problemen waarmee mensen geconfronteerd worden. Khaled Hosseini volgt zijn personages van Kabul naar Parijs, van San Francisco naar het Griekse eiland Tinos, en weer terug naar Kabul. Hij onderzoekt de vele manieren waarop mensen elkaar liefhebben, elkaar pijn doen en verraden én hoe ze zich voor elkaar opofferen. Gedreven door zijn inlevingsvermogen en psychologische inzicht, waardoor De vliegeraar en Duizend schitterende zonnen wereldwijde bestsellers werden, toont Khaled Hosseini zich in En uit de bergen kwam de echo eens te meer een geboren verhalenverteller. Khaled Hosseini is een van de meest succesvolle en geliefde auteurs ter wereld. Hij is ook ambassadeur voor de United Nations High Commissioner for Refugees en de United Nations Refugee Agency, en hij is oprichter van de Khaled Hosseini Foundation, een organisatie die humanitaire hulp biedt aan Afghanistan. Hosseini woont in Californië.

Introduction in first chapter includes various topics given in the book. Second chapter deals with information theory that includes modes of sources and channels, information and entropy, source coding, discrete memoryless channels, mutual information and Shannon's theorems are given. Linear block codes, cyclic codes, Hamming codes, syndrome decoding, convolutional codes are given in third chapter. Spread spectrum communication includes pseudo noise sequences, direct sequence and frequency hop spread spectrum. It is presented in fourth chapter. Multiple access techniques are reviewed in fifth chapter. Sixth chapter deals with satellite communications. Satellite orbits, satellite access, earth station, transponder, frequency reuse, link budget, VSAT and MSAT are presented. Fibre optic communication is introduced in seventh chapter. Light propagation in fiber, losses, modes, dispersion, light sources and detectors, fiber optic link are presented in this chapter.

Many argue that telecommunications network infrastructure is the most impressive and important technology ever developed. Analyzing the telecom market’s constantly evolving trends, research directions, infrastructure, and vital needs, Telecommunication Networks responds with revolutionized engineering strategies to optimize network construction. Omnipresent in society, telecom networks integrate a wide range of technologies. These include quantum field theory for the study of optical amplifiers, software architectures for network control, abstract algebra required to design error correction codes, and network, thermal, and mechanical modeling for equipment platform design. Illustrating how and why network developers make technical decisions, this book takes a practical engineering approach to systematically assess the network as a whole—from transmission to switching. Emphasizing a uniform bibliography and description of standards, it explores existing technical developments and the potential for projected alternative architectural paths, based on current market indicators. The author characterizes new device and equipment advances not just as quality improvements, but as specific responses to particular technical market necessities. Analyzing design problems to identify potential links and commonalities between different parts of the system, the book addresses interdependence of these elements and their individual influence on network evolution. It also considers power consumption and real estate, which sometimes outweigh engineering performance data in determining a product’s success. To clarify the potential and limitations of each presented technology and system analysis, the book includes quantitative data inspired by real products and prototypes. Whenever possible, it applies mathematical modeling to present measured data, enabling the reader to apply demonstrated concepts in real-world situations. Covering everything from high-level architectural elements to more basic component physics, its focus is to solve a problem from different perspectives, and bridge descriptions of well-consolidated solutions with newer research trends.

De markt van mobiele communicatie is nog altijd het snelst groeiende segment van de wereldwijde computer- en communicatiemarkt. Jochen Schiller behandelt in zijn boek Mobiele communicatie uitgebreid de huidige stand van zaken in de technologie en het onderzoek van mobiele communicatie, en schetst daarnaast een gedetailleerde achtergrond van het vakgebied. In het boek worden alle belangrijke aspecten van mobiele en draadloze communicatie besproken, van signalen en toegangsprotocollen tot beveiliging en de eisen die applicaties stellen. De nadruk ligt hierbij op de overdracht van digitale data. Schiller illustreert de theorie met vele voorbeelden en maakt gebruik van diverse didactische hulpmiddelen, waardoor het boek zeer geschikt is voor zelfstudie en gebruik in het hoger onderwijs. In dit boek:nieuw materiaal van derde-generatiesystemen(3g) met uitgebreide behandeling van UMTS/W-CDMABehandeling van de nieuwe WLAN-standaarden voor hoger data rates: 802.11a, b, g en HiperLan2uitgebreide behandeling van Bluetooth met IEEE 802.15, profielen en applicatiesuitgebreide behandeling van ad-hoc netwerken/networking en draadloze 'profiled'TCPMigratie van WAP I.x. en i-mode richting WAP 2.0.

IntroductionSources are signals, basic signal processing operations in digital communication, channels for digital communication. Sampling ProcessSampling Theorem, quadrature sampling of BP signal, reconstruction of a message from its samples, signal distortion in sampling, practical aspects of sampling and signal recovery, PAM, TDM.Waveform Coding TechniquesPCM, Channel noise and error probability, quantization noise and SNR, robust quantization, DPCM, DM, coding speech at low bit rates, applications.Base-band Shaping for Data Transmission Discrete PAM signals, power spectra of discrete PAM signals, ISI, Nyquist's criterion for distortionless base-band binary transmission, correlative coding, eye pattern, base-band M-ary PAM systems, adaptive equalization for data transmissionDigital Modulation TechniquesDigital modulation formats, coherent binary modulation techniques, coherent quadrature modulation techniques, Non-coherent binary modulation techniques, comparison of binary and quarternary modulation techniques, M-ary, modulation techniques, effect of ISI-bit versus symbol error probability, synchronization and applications.Detection and Estimation Gram-Schmidt Orthogonalization procedure, geometric interpretation of signals, response of bank of

correlators to noisy input, detection of known signals in noise, probability of error, correlation receiver, matched filter receiver, detection of signals with unknown phase in noise, estimation : concept and criteria, maximum likelihood estimation.Spread Spectrum ModulationPseudo-noise sequences, notion of spread spectrum, direct sequence spread coherent binary PSK, signal space dimensionality and processing gain, probability of error, frequency hop spread spectrum, applications.

The book is written for an undergraduate course on the Signals and Systems. It provides comprehensive explanation of continuous time signals and systems , analogous systems, Fourier transform, Laplace transform, state variable analysis and z-transform analysis of systems. The book starts with the various types of signals and operations on signals. It explains the classification of continuous time signals and systems. Then it includes the discussion of analogous systems. The book provides detailed discussion of Fourier transform representation, properties of Fourier transform and its applications to network analysis. The book also covers the Laplace transform, its properties and network analysis using Laplace transform with and without initial conditions. The book provides the detailed explanation of modern approach of system analysis called the state variable analysis. It includes various methods of state space representation of systems, finding the state transition matrix and solution of state equation. The discussion of network topology is also included in the book. The chapter on z-transform includes the properties of ROC, properties of z-transform, inverse z-transform, z-transform analysis of LTI systems and pulse transfer function. The state space representation of discrete systems is also incorporated in the book. The book uses plain, simple and lucid language to explain each topic. The book provides the logical method of explaining the various complicated topics and stepwise methods to make the understanding easy. The variety of solved examples is the feature of this book. The book explains the philosophy of the subject which makes the understanding of the concepts very clear and makes the subject more interesting.

There are eight chapters, useful appendix and solved question papers in the book. Basic digital communication, line codes and sampling methods are presented at the beginning. Digital pulse modulation techniques such as PCM, DPCM, DM, ADM are presented. Continuous wave digital modulation methods such as BPSK, DPSK, QPSK, QAM, BFSK and OOK are presented with mathematical analysis of modulators and receivers. Issues related to baseband transmission such as ISI, Nyquist pulse shaping criterian, optimum reception, matched filter and eye patterns are also discussed. Concepts of information theory such as discrete memoryless channels, mutual information, shannon's theorems on source coding are also presented. Coding using linear block codes, cyclic codes and convolutional coding is also discussed. Secured communication using spread spectrum modulation is also discussed in detail.

Amplitude modulation and Angle modulation are discussed in first two chapters. AM, FM, analysis equations, modulators, detectors, transmission and reception are thoroughly presented. SSB, DSB, VSB, FDM are also discussed.? Noise theory is given in third chapter. It includes random variables, probability, random processes and correlation functions. Noise factor, noise temperature and mathematical analysis of noise is presented. Performance of modulation systems in the presence of noise is explained in fourth chapter. Figure of merit, capture effect and threshold effect are also presented. Last chapter presents information theory. Entropy information rate, discrete memoryless source, source coding, Shannon's theorems are also given in detail. Mutual information and channel capacity are also presented.

In Sapiens boog Yuval Noah Harari zich over het verleden, in Homo Deus over de toekomst; nu laat hij zijn licht schijnen over het heden. Wat zijn de uitdagingen van onze tijd? Hoe beschermen we onszelf tegen een nucleaire oorlog, ecologische rampen en technologische bedreigingen? Wat is de oorzaak van de opkomst van populisten als Donald Trump? Hoe weren we ons tegen fake news? Moeten we ons voorbereiden op een nieuwe wereldoorlog? Wat moeten we denken van het opkomend nationalisme? Vragen de mondiale problemen die op ons afkomen om andere politieke systemen? Is het een goed idee dat we onze data overdragen aan enkele grote commerciële spelers, of wordt het tijd om het eigendom van data te reguleren? En wat wordt de grote nieuwe wereldmacht, Amerika, Europa of China? In dit boek beantwoordt Yuval Noah Harari de 21 meest urgente vragen van onze tijd.

Pulse Digital ModulationElements of digital communication systems, Advantages of digital communication systems, Elements of PCM : Sampling, Quantization & Coding, Quantization error, Compading in PCM systems. Differential PCM systems (DPCM).Delta ModulationDelta modulation, its drawbacks, Adaptive delta modulation, Comparison of PCM and DM systems, Noise in PCM and DM systems.Digital Modulation TechniquesIntroduction ASK, FSK, PSK, DPSK, DEPSK, QPSK, M-ary, PSK, ASK, FSK, similarity of BFSK and BPSK.Data TransmissionBase band signal receiver, Probability of error, the optimum filter, Matched filter, Probability of error using matched filter, Coherent reception, Non-coherent detection of FSK, Calculation of error probability of ASK, BPSK, BFSK, QPSK.Information TheoryDiscrete messages, Concept of amount of information and its properties, Average information, Entropy and its properties, Information rate, Mutual information and its properties.Source CodingIntroduction, Advantages, Shannon's theorem, Shannon-Fano coding, Huffman coding, Efficiency calculations, Channel capacity of discrete and analog channels, Capacity of a Gaussian channel, Bandwidth-S/N trade off.Linear Block CodesIntroduction, Matrix description of Linear Block codes, Error detection and error correction capabilities of Linear block codes, Hamming codes, Binary cyclic codes, Algebraic structure, Encoding, Syndrome calculation, BCH Codes.Convolution CodesIntroduction, Encoding of convolution codes, Time domain approach, Transform domain approach, Graphical approach : state, Tree and trellis diagram decoding using Viterbi algorithm.

Designed as a text for the undergraduate students of Electronics and Communication Engineering/Electronics and Telecommunication Engineering as well as for postgraduate students of Communication Systems/Electronics and Communication Engineering, the book presents all the topics related to satellite communication in an organised way, starting from the basic concepts to the latest advancements in the field. The book commences with an introductory chapter that familiarises the readers with the evolution of satellite communication. The following chapters expatiate on orbital mechanics, perturbation factors of the orbit and different orbit configurations. Next, the launching mechanism and satellite sub-systems, which together configure a complete satellite system, are focused. The book further explicates the link calculation to facilitate the design aspect. In addition, satellite access mechanism, and Internet linking via satellite are also outlined in the text. Finally, the concluding chapters of the book elaborate navigation satellite, direct broadcasting satellite television, VSAT and special purpose satellites. With all the contents enriched by the vast experience of the author, the book provides a comprehensive treatment of the subject, and enables the students to rely upon this exclusive book only. KEY FEATURES The presentation of every topic is kept simple and systematic to help students understand the complicated concepts easily. Annexures covering presentations of some additional relevant information are appended to most of the chapters. The book is rich in pedagogical features to the full, which include ample figures and tables,

summary and review questions at the end of each chapter. Solved numerical problems are provided in between the text. Bibliography is given at the end of the book.

Amplitude Modulation : Transmission and ReceptionPrinciples of amplitude modulation - AM envelope, Frequency spectrum and bandwidth, Modulation index and Percent modulation, AM power distribution, AM modulator circuits- low-level AM modulator, Medium power AM modulator, AM transmitters-Low-level transmitters, High level transmitters, receiver parameters, AM reception - AM receivers - TRF, Super heterodyne receiver, Double conversion AM recivers.Angle Modulation : Transmission and Reception Angle modulation - FM and PM waveforms, Phase deviation and Modulation index, Frequency deviation, Phase and Frequency modulators and demodulators, Frequency spectrum of Angle - Modulated waves. Bandwidth requirements of Angle modulated waves, Commercial Broadcast band FM, Average power of an angle modulated wave, Frequency and Phase modulators, A direct FM transmitters, Indirect transmitters, Angle modulation Vs Amplitude modulation, FM receivers : FM demodulators, PLL FM demodulators, FM noise suppression, Frequency versus Phase modulation.Digital Transmission and Data CommunicationIntroduction, Pulse modulation, PCM - PCM sampling, Sampling rate, Signal to quantization noise rate, Companding - Analog and Digtial - Percentage error, Delta modulation, Adaptive delta modulation, Differential pusle code modulation, Pulse transmission - ISI, Eyepattern, Data communication history, Standards, Data communication circuits, Data communication codes, Error control, Hardware, Serial and Parallel interfaces, Data modems, - Asynchronous modem, Synchronous modem, Low-speed modem, Medium and High speed modem, Modem control.Digital Communication Introduction, Shannon limit for information capacity, Digital amplitude modulation, Frequency shift keying, FSK bit rate and baud, FSK transmitter, BW consideration of FSK, FSK receiver, Phase shift keying - Binary phase shift keying - QPSK, Quandrature Amplitude modulation, Bandwidth efficiency, Carrier recovery - Squaring loop, Costas loop, DPSK.Spread Spectrum and Multiple Access Techniques Introduction, Pseudo-noise sequence, DS spread spectrum with coherent binary PSK, Processing gain, FH spread spectrum, Multiple access techniques - Wireless communication, TDMA and FDMA, Wireless communication systems, Source coding of speech for wireless communications.

Analysis tools such as Fourier series, Fourier transforms signals, systems and spectral densities are discussed in the second chapter. Introduction is presented in the first chapter. Third chapter presents additional analysis techniques such as probability, random variables, distribution functions and density functions. Probability models and random processes are also discussed. Noise representation, sources, noise factor, noise temperature, filtering of noise, noise bandwidth and performance of AM/FM in presence of noise is discussed in fourth chapter. Analog pulse modulation is presented in fifth chapter. Sampling, PAM, PAM/TDM are discussed in this chapter. Sixth chapter deals with digital pulse modulation methods such as PCM, DM, ADM and DPCM. Seventh chapter presents digital multiplexers, line coding, synchronization, scramblers, ISI, eye patterns and equalization techniques. Digital modulation is presented in eighth chapter. Phase shift keying, frequency shift keying, QPSK, QAM and MSK are presented. Last chapter deals with error performance of these techniques using matched filter.

This book constitutes the refereed proceedings of the First International Conference on Advanced Hybrid Information Processing, ADHIB 2017, held in Harbin, China, in July 2017. The 64 full papers were selected from 134 submissions and focus on advanced methods and applications for hybrid information processing.

Modulation Systems Time and frequency domain representation of signals, Amplitude modulation and demodulation, Frequency modulation and demodulation, Super heterodyne radio receiver. Frequency division multiplexing, Pulse width modulation.Transmission Medium Transmission lines - Types, Equivalent circuit, Losses, Standing waves, Impedance matching, Bandwidth: Radio propagation - Ground wave and space wave propagation, Critical frequency maximum usable frequency, Path loss, White Gaussian noise.Digital Communication Pulse code modulation, Time division multiplexing, Digital T-carrier system. Digital radio system. Digital modulation: Frequency and phase shift keying - Modulator and demodulator, Bit error rate calculation.Data Communication and Network Protocol Data communication codes, Error control, Serial and parallel interface, Telephone network, Data modem, ISDN.LAN.ISO-OSI seven layer architecture for WAN.Satellite and Optical Fibre Communications Orbital satellites, Geostationary satellites, Look angles, Satellite system link models, satellite system link equations: advantages of optical fibre communication - Light propagation through fibre, Fibre loss, Light sources and detectors.

The most important resources in civil aviation and commercial use of the outer space are legal rights to occupy certain space in airports and geostationary orbits respectively. This book clarifies the nature of the rights called "slots" in both arena. It then reviews both the domestic and international slot distribution mechanisms and Common Law principles therein.

Communication process, Source of information, Communication channels, Base-band and Pass-band signals, Representation of signal and systems, The modulation process, Primary communication resources, Analog versus digital communications.Amplitude modulationFrequency division and time division multiplexing, Suppressed carrier systems, Single side band transmission, Amplitude modulation with carrier power, Effect of frequency and phase errors in synchronous detection, Comparison of various AM systems, Vestigial side band transmission.Angle ModulationNarrow and wide band FM, Multiple frequency and square wave modulation, Linear and Non-linear modulation, Phase modulation, Demodulation of FM signals, Noise reduction.Pulse Modulation Pulse amplitude modulation, Other forms of pulse modulation, Bandwidth required for transmission PAM signals, Comparison of frequency division and Time division multiplexed systems.NoiseDifferent types of noise, Noise calculations, Equivalent noise bandwidth, Noise figures, Effective noise temperature, Noise figure in cascaded stages.Performance of Communication SystemsNoise calculation in communication systems, Noise in amplitude modulated, angle modulated and pulse modulated systems, Comparison of coded and un-coded systems.Information TransmissionMeasures of information, Channel capacity, transmission of continuous signals, Exchange of bandwidth for signal to noise ratio, Efficiency of PCM systems.

This book forms the first part of a complete MSc course in an area that is fundamental to the continuing revolution in information technology and communication systems. Massively exhaustive, authoritative, comprehensive and reinforced with software, this is an introduction to modern methods in the developing field of Digital Signal Processing (DSP). The focus is on the design of algorithms and the processing of digital signals in areas of communications and control, providing the reader with a comprehensive introduction to the underlying principles and mathematical models. Provides an introduction to modern methods in the developing field of Digital Signal Processing (DSP) Focuses on the design of algorithms and the processing of digital signals in areas of communications and control Provides a comprehensive introduction to the underlying principles and mathematical models of Digital Signal Processing

AntennasThe half-wave dipole. Antenna characteristics. Ground effects. Effects of Antenna height. Antenna coupling. Antenna arrays. Special purpose Antennas. UHF and microwave Antennas.Television PrinciplesTelevision system and standards. The composite video signal. Blanking and Synchronizing pulses. Monochrome Television transmission and reception. Horizontal and Vertical deflection circuits. Synchronizing circuits. Colour transmission. Colour reception. Cable TV. Digital TV, HDTV.Satellite CommunicationKepler s Laws. Satellite orbits, Spacing and frequency allocation. Look angles, Orbital perturbations and

corrections. Satellite Launching. Spacecraft subsystems. Satellite system link models. Link equations, Multiple access, Direct broadcast satellite services. Applications of LEO, MEO and Geo-stationary satellites.Radar SystemsBasic Principles. Radar performance factors. MTI and Pulse Doppler radar. Continuous wave Doppler radar, Radar antenna. Phased array radars. Elements of Communication System and its LimitationsAmplitude ModulationAmplitude modulation and detection, Generation and detection of DSB-SC, SSB and vestigial side band modulation, Carrier acquisition.AM transmitters and receivers, Superheterodyne receiver, IF amplifiers, AGC circuits, Frequency division multiplexing.Angle ModulationBasic definitions, Narrow band and wideband frequency modulation, Transmission bandwidth of FM signals. Generation and detection of frequency modulation.Noise : External noise, Internal noise, Noise calculations, Signal to noise ratio, Noise in AM and FM systems.Pulse ModulationSampling process, Analog pulse modulation systems, Pulse amplitude modulation, Pulse width modulation and pulse position modulation.Waveform Coding Techniques : Discretization in time and amplitude, Quantization process, Quantization noise, Pulse code modulation, Differential pulse code modulation, Delta modulation and adaptive delta modulation.Digital Modulation TechniquesTypes of digital modulation, Waveforms for amplitude, frequency and phase shift keying, Methods of generation of coherent and non-coherent, ASK, FSK and PSK, Comparison of above digital techniques.Time Division MultiplexingFundamentals, Electronic commutator, Bit/byte interleaving, T1 carrier system, Synchronization and signaling of T1, TDM and PCM hierarchy, Synchronization techniques.Information Theory : Measure of information, Entropy and information rate, Channel capacity, Hartley Shannon law, Huffman coding, Shannon Fano coding.

Various measures of information are discussed in first chapter. Information rate, entropy and mark off models are presented. Second and third chapter deals with source coding. Shannon's encoding algorithm, discrete communication channels, mutual information, Shannon's first theorem are also presented. Huffman coding and Shannon-Fano coding is also discussed. Continuous channels are discussed in fourth chapter. Channel coding theorem and channel capacity theorems are also presented. Block codes are discussed in chapter fifth, sixth and seventh. Linear block codes, Hamming codes, syndrome decoding is presented in detail. Structure and properties of cyclic codes, encoding and syndrome decoding for cyclic codes is also discussed. Additional cyclic codes such as RS codes, Golay codes, burst error correction is also discussed. Last chapter presents convolutional codes. Time domain, transform domain approach, code tree, code trellis, state diagram, Viterbi decoding is discussed in detail.