Following the success of the First MOBILIGHT 2009 in Athens, Greece, the Second International Conference on Mobile Lightweight Systems (MOBILIGHT) was held in Barcelona, Spain on May 10-12, 2010. It was not an easy decision to carry on organizing a scientific event on wireless communications, where competition is really enormous. This decision was motivated by discussions with many colleagues about the current unprecedented demand for lightweight wireless communication devices with high usability and performance ability to support added-value services in a highly mobile environment. Such devices follow the users everywhere they go (at work, at home, while travelling, in a classroom, etc.) and result in exciting research, development and business opportunities. Such scenarios clearly demand significant upgrades to the existing communication paradigm in terms of infrastructure, devices and services to support the "anytime, anywhere, any device" philosophy, providing novel and fast-evolving requirements and expectations on - search and development in the field of information and communication technologies. The core issue is to support wireless users' desire for 24/7 network availability and transparent access to "their own" services. In this context, we continue to envision an international forum where practitioners and researchers coming from the many areas involved in lightweight wireless systems' design and deployment would be able to interact and exchange experiences.
Download Free Forward Error Correction Fec Coding In Video Network Transmission Concepts Modeling And Performance Analysis

is widely dispersed. Second, the information required to evaluate a particular technique under situations that are encountered in practice is available for the most part only in private company reports. This book is aimed at correcting both of these problems. It is written for the design engineer who must build the coding and decoding equipment and for the communication system engineer who must incorporate this equipment into a system. It is also suitable as a senior-level or first-year graduate text for an introductory one-semester course in coding theory. The book uses a minimum of mathematics and entirely avoids the classical theorem/proof approach that is often seen in coding texts.

**Satellite Communications**

Scientific knowledge grows at a phenomenal pace—but few books have had as lasting an impact or played as important a role in our modern world as The Mathematical Theory of Communication, published originally as a paper on communication theory more than fifty years ago. Republished in book form shortly thereafter, it has since gone through four hardcover and sixteen paperback printings. It is a revolutionary work, astounding in its foresight and contemporaneity. The University of Illinois Press is pleased and honored to issue this commemorative reprinting of a classic.

**Polar Coding for Information Reconciliation Applications**

Information systems, Information exchange, Coding (data conversion), Data processing, Data transmission, Data transfer, Data handling, Data layout

**Modern Personal Radio Systems**

Forward error correction (FEC) coding has often been proposed to recover packet losses and improve packet video transport in packet-switched communication networks. This book proposes a model-based analytic approach for evaluating the overall efficacy of FEC coding in combating packet losses in IP networks. The approach facilitates the selection of optimal coding strategies for different multimedia applications with various quality-of-service requirements and system constraints. This book then investigates the efficacy of FEC from the perspective of the video application layer and assesses the effectiveness of FEC coding in improving end-to-end video transport quality. A model-based framework is developed to describe FEC-protected packet video network transport system which is then used to analytically investigate the overall efficacy of packet-level FEC in improving the end-to-end video PSNR quality. This book also investigates the accuracy of different discrete-time Markov chain models in characterizing the random packet-loss process associated with transport networks.

**Turbo Coding, Turbo Equalisation and Space-Time Coding**

This thesis summarizes research on the design and implementation of the unequal error protection (UEP) mechanism for the RaptorQ forward error correction (FEC) scheme. As part of this research, existing UEP mechanisms for various fountain codes were evaluated. Two new UEP methods were proposed for the RaptorQ coding scheme, and these methods were designed with the assumption that all of the symbols in a source block have the same priority. The first method, known as priority based overhead number (PBON), was based on the priority encoding transmission model, wherein the error-correction capability was altered by making the number of overhead symbols proportional to the priority of the information symbols. This method was extended to the RaptorQ codes with some changes and evaluated for failure probability and performance. The second method, known as priority based precode ratio (PBPR), was designed by changing the precode properties of the RaptorQ codes. The ratio of precode symbols to Luby-Transform symbols in the RaptorQ codes was changed to achieve different error correction capabilities for each priority group. The scheme with the higher number of precode symbols provided superior error-correction capabilities compared to those with fewer precode symbols. Both methods were empirically verified through simulation in the C++ programming language. The results demonstrated that the higher-importance class depicted a better error-correction capability than the lower-importance class.

**DVB**

This book presents an in-depth study on the recent advances in Wireless Sensor Networks (WSNs). The authors describe the existing WSN applications and discuss the research efforts being undertaken in this field. Theoretical analysis and factors influencing protocol design are also highlighted. The authors explore state-of-the-art protocols for WSN protocol stack.
in transport, routing, data link, and physical layers. Moreover, the synchronization and localization problems in WSNs are investigated along with existing solutions. Furthermore, cross-layer solutions are described. Finally, developing areas of WSNs including sensor-actor networks, multimedia sensor networks, and WSN applications in underwater and underground environments are explored. The book is written in an accessible, textbook style, and includes problems and solutions to assist learning. Key Features: The ultimate guide to recent advances and research into WSNs Discusses the most important problems and issues that arise when programming and designing WSN systems Shows why the unique features of WSNs -- self-organization, cooperation, correlation -- will enable new applications that will provide the end user with intelligence and a better understanding of the environment Provides an overview of the existing evaluation approaches for WSNs including physical testbeds and software simulation environments Includes examples and learning exercises with a solutions manual; supplemented by an accompanying website containing PPT-slides. Wireless Sensor Networks is an essential textbook for advanced students on courses in wireless communications, networking and computer science. It will also be of interest to researchers, system and chip designers, network planners, technical managers and other professionals in these fields.

Error-Correction Coding for Digital Communications

This revised edition provides professionals with an up-to-date introduction to third generation (3G) mobile communication system principles, concepts, and applications, without the use of advanced mathematics. This newly revised edition of an Artech House bestseller provides professionals with an up-to-date introduction to third generation (3G) mobile communication system principles, concepts, and applications, without the use of advanced mathematics. The second edition includes an even more thorough treatment of potential 3G applications and descriptions of new, emerging technologies.

Unequal Error Protection with the RaptorQ Forward Error Correction Scheme

Learn how to build efficient, simple, high performance indoor optical wireless communication systems based on visible and infrared light.

Combined Forward Error Correction and Error Concealment for Digital Video Transmission

This book discusses both the theory and practical applications of self-correcting data, commonly known as error-correcting codes. The applications included demonstrate the importance of these codes in a wide range of everyday technologies, from smartphones to secure communications and transactions. Written in a readily understandable style, the book presents the authors’ twenty-five years of research organized into five parts: Part I is concerned with the theoretical performance attainable by using error correcting codes to achieve communications efficiency in digital communications systems. Part II explores the construction of error-correcting codes and explains the different families of codes and how they are designed. Techniques are described for producing the very best codes. Part III addresses the analysis of low-density parity-check (LDPC) codes, primarily to calculate their stopping sets and low-weight codeword spectrum which determines the performance of these codes. Part IV deals with decoders designed to realize optimum performance. Part V describes applications which include combined error correction and detection, public key cryptography using Goppa codes, correcting errors in passwords and watermarking. This book is a valuable resource for anyone interested in error-correcting codes and their applications, ranging from non-experts to professionals at the forefront of research in their field. This book is open access under a CC BY 4.0 license.

Information Technology, High Efficiency Coding and Media Delivery in Heterogeneous Environments. MPEG Media Transport Forward Error Correction (FEC) Codes

Providing in-depth treatment of error correction Error Correction Coding: Mathematical Methods and Algorithms, 2nd Edition provides a comprehensive introduction to classical and modern methods of error correction. The presentation provides a clear, practical introduction to using a lab-oriented approach. Readers are encouraged to implement the encoding and decoding algorithms with explicit algorithm statements and the mathematics used in error correction, balanced with an algorithmic development on how to actually do the encoding and decoding. Both block and stream (convolutional) codes are discussed, and the mathematics required to understand them are introduced on a “just-in-time” basis as the reader progresses.
Digital Communications with Emphasis on Data Modems

Introduction to Computer Networks and Cybersecurity

In order for wireless devices to function, the signals must be coded in standard ways so that the sender and the receiver can communicate. This area of video source coding is one of the key challenges in the worldwide push to deliver full video communications over wireless devices. Video Coding for Mobile Communications reviews current progress in this field and looks at how to solve some of the most important technology issues in the months and years ahead. The vision of being able to communicate from anywhere, at any time, and with any type of information is on its way to becoming reality. This natural convergence of mobile communications and multimedia is a field that is expected to achieve unprecedented growth and commercial success. Current wireless communication devices support a number of basic multimedia services (voice, messages, basic internet access), but have coding problems that need to be solved before “real-time” mobile video communication can be achieved. Addresses the emerging field of mobile multimedia communications

BS EN ISO/IEC 23008-10 AMD1. Information Technology. High Efficiency Coding and Media Delivery in Heterogeneous Environments

Rapid advances in electronic and optical technology have enabled the implementation of powerful error-control codes, which are now used in almost the entire range of information systems with close to optimal performance. These codes and decoding methods are required for the detection and correction of the errors and erasures which inevitably occur in digital information during transmission, storage and processing because of noise, interference and other imperfections. Error-control coding is a complex, novel and unfamiliar area, not yet widely understood and appreciated. This book sets out to provide a clear description of the essentials of the subject, with comprehensive and up-to-date coverage of the most useful codes and their decoding algorithms. A practical engineering and information technology emphasis, as well as relevant background material and fundamental theoretical aspects, provides an in-depth guide to the essentials of Error-Control Coding. Provides extensive and detailed coverage of Block, Cyclic, BCH, Reed-Solomon, Convolutional, Turbo, and Low Density Parity Check (LDPC) codes, together with relevant aspects of Information Theory EXIT chart performance analysis for iteratively decoded error-control techniques Heavily illustrated with tables, diagrams, graphs, worked examples, and exercises Invaluable companion website features slides of figures, algorithm software, updates and solutions to problems Offering a complete overview of Error Control Coding, this book is an indispensable resource for students, engineers and researchers in the areas of telecommunications engineering, communication networks, electronic engineering, computer science, information systems and technology, digital signal processing and applied mathematics.

Essentials of Error-Control Coding

bull; Demonstrates how real-time audio and video is packetized for transmission. bull; Explains the details of the RTP standards and related concepts. bull; How to implement RTP to work around network problems and limitations

Practical Error Correction Design for Engineers

A text providing insight into the fundamental problems and solutions found in modern personal
communications: service requirements, coverage problems, fundamental interference, cellular
architectures and signalling, network management, data and supplementary services, and
satellite services. Also describes the approach of the GSM methodology to some of these
problems, although the same principles apply to DCS 1800 and other technologies. This volume
builds on and updates a 1991 IEE text, Personal and Mobile Radio Systems by the same editor.
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RTP

*Reed-Solomon error correcting codes (RS codes) are widely used in communication and data
storage systems to recover data from possible errors that occur during data transfer. A
growing application of RS codes is Forward Error Correction (FEC) in the Optical Network (OTN
G.709), which uses RS(255,239) to support the OTU-3 (43.018 Gbps) standard. There have been
considerable efforts in the area of RS architecture for ASIC implementation. However, there
appears to be little reported work on efficient RS codec (encoder and decoder) for Field
Programmable Gate Arrays (FPGAs), which has increasing interests in industry. This thesis
investigates the implementation and design methodology of the RS(255,239) codec on FPGAs. A
portable VHDL codec is developed and synthesized for Xilinx's Virtex4 and Altera's StratixII.
The FPGA architectures are analyzed and the required design methodologies are adopted to
efficiently utilize the available resources. Unfortunately, due to the fixed size of FPGA
devices, the RS decoder is not only constrained by the required timing of the system, but
also by the size of the targeted device. This research will facilitate the decision-making
process for selecting a reconfigurable device for a RS decoder, implementing the Berlekamp-
Massey Algorithm*--Abstract.

Error Correction Coding

Turbo Code Applications

The Complete *Tool Kit for the Hottest Area in RF/Wireless Design! Short-range
wireless—communications over distances of less than 100 meters—is the most rapidly growing
segment of RF/wireless engineering. Alan Bensky is an internationally recognized expert in
short-range wireless, and this new edition of his bestselling book is completely revised to
cover the latest developments in this fast moving field. You'll find coverage of such cutting-
edge topics as: • architectural trends in RF/wireless integrated circuits • compatibility and
conflict issues between different short-range wireless systems • *Zigbee and related new IEEE
standards for short-range communications • latest U.S. and international regulatory standards
for spread spectrum, ultra wideband, and other advanced communications techniques Alan Bensky
also thoroughly discusses the fundamentals of radio signal propagation, communications
protocols and modulation methods, information theory, antennas and transmission lines,
receivers, transmitters, radio system design, and how to successfully implement a short-range
wireless system. All material has been carefully updated and revised to make it as
technically up-to-the-minute as possible. You'll also find coverage of Bluetooth, "Wi-Fi and
related 802.11 variants, digital modulation methods, and other essential information for
planning and designing short-range wireless hardware and networks. This new edition will,
like the first edition, be an invaluable reference for engineers and technical professionals
who design, support, market, and maintain short-range wireless communications systems. No
other book contains EVERYTHING pertaining to short-range wireless design. Covers all the hot
topics like 802.11, Zigbee, Wi-Fi and Bluetooth.

Error-Correction Coding and Decoding

The main areas of the conference include fundamental problems of synchronization, generating
and signal processing in telecommunications, broadcasting, radar, navigation with the
practical application issues

The Communications Handbook

Channel coding lies at the heart of digital communication and data storage, and this detailed
introduction describes the core theory as well as decoding algorithms, implementation
details, and performance analyses. In this book, Professors Ryan and Lin provide clear
information on modern channel codes, including turbo and low-density parity-check (LDPC)
codes. They also present detailed coverage of BCH codes, Reed-Solomon codes, convolutional
codes, finite geometry codes, and product codes, providing a one-stop resource for both
classical and modern coding techniques. Assuming no prior knowledge in the field of channel
coding, the opening chapters begin with basic theory to introduce newcomers to the subject. Later chapters then extend to advanced topics such as code ensemble performance analyses and algebraic code design. 250 varied and stimulating end-of-chapter problems are also included to test and enhance learning, making this an essential resource for students and practitioners alike.

**2019 Systems of Signal Synchronization, Generating and Processing in Telecommunications (SYNCHROINFO)**

This handbook is an authoritative, comprehensive reference on optical networks, the backbone of today's communication and information society. The book reviews the many underlying technologies that enable the global optical communications infrastructure, but also explains current research trends targeted towards continued capacity scaling and enhanced networking flexibility in support of an unabated traffic growth fueled by ever-emerging new applications. The book is divided into four parts: Optical Subsystems for Transmission and Switching, Core Networks, Datacenter and Super-Computer Networking, and Optical Access and Wireless Networks. Each chapter is written by world-renown experts that represent academia, industry, and international government and regulatory agencies. Every chapter provides a complete picture of its field, from entry-level information to a snapshot of the respective state-of-the-art technologies to emerging research trends, providing something useful for the novice who wants to get familiar with the field to the expert who wants to get a concise view of future trends.

**Superdense Coding Interleaved with Forward Error Correction**

Covering the full range of channel codes from the most conventional through to the most advanced, the second edition of Turbo Coding, Turbo Equalisation and Space-Time Coding is a self-contained reference on channel coding for wireless channels. The book commences with a historical perspective on the topic, which leads to two basic component codes, convolutional and block codes. It then moves on to turbo codes which exploit iterative decoding by using algorithms, such as the Maximum-A-Posteriori (MAP), Log-MAP and Soft Output Viterbi Algorithm (SOVA), comparing their performance. It also compares Trellis Coded Modulation (TCM), Turbo Trellis Coded Modulation (TTCM), Bit-Interleaved Coded Modulation (BICM) and Iterative BICM (BICM-ID) under various channel conditions. The horizon of the content is then extended to incorporate topics which have found their way into diverse standard systems. These include space-time block and trellis codes, as well as other Multiple-Input Multiple-Output (MIMO) schemes and near-instantaneously Adaptive Quadrature Amplitude Modulation (AQAM). The book also elaborates on turbo equalisation by providing a detailed portrayal of recent advances in partial response modulation schemes using diverse channel codes. A radically new aspect for this second edition is the discussion of multi-level coding and sphere-packing schemes, Extrinsic Information Transfer (EXIT) charts, as well as an introduction to the family of Generalized Low Density Parity Check codes. This new edition includes recent advances in near-capacity turbo-transceivers as well as new sections on multi-level coding schemes and of Generalized Low Density Parity Check codes Comparatively studies diverse channel coded and turbo detected systems to give all-inclusive information for researchers, engineers and students Details EXIT-chart based irregular transceiver designs Uses rich performance comparisons as well as diverse near-capacity design examples

**Short-range Wireless Communication**

If a network is not secure, how valuable is it? Introduction to Computer Networks and Cybersecurity takes an integrated approach to networking and cybersecurity, highlighting the interconnections so that you quickly understand the complex design issues in modern networks. This full-color book uses a wealth of examples and illustrations to effective

**Forward Error Correction Coding in Video Network Transmission**

**Wireless Infrared Communications**

For more than six years, The Communications Handbook stood as the definitive, one-stop reference for the entire field. With new chapters and extensive revisions that reflect recent technological advances, the second edition is now poised to take its place on the desks of engineers, researchers, and students around the world. From fundamental theory to state-of-the-art applications, The Communications Handbook covers more areas of specialty with greater
depth that any other handbook available. Telephony Communication networks Optical communications Satellite communications Wireless communications Source compression Data recording Expertly written, skillfully presented, and masterfully compiled, The Communications Handbook provides a perfect balance of essential information, background material, technical details, and international telecommunications standards. Whether you design, implement, buy, or sell communications systems, components, or services, you'll find this to be the one resource you can turn to for fast, reliable, answers.

**Efficient Forward Error Correction Coding Technique for Spread Spectrum Communications**

This book uses a practical approach in the application of theoretical concepts to digital communications in the design of software defined radio modems. This book discusses the design, implementation and performance verification of waveforms and algorithms appropriate for digital modulation and demodulation in modern communication systems. Using a building-block approach, the author provides an introductory to the advanced understanding of acquisition and data detection using source and executable simulation code to validate the communication system performance with respect to theory and design specifications. The author focuses on theoretical analysis, algorithm design, firmware and software designs and subsystem and system testing. This book treats system designs with a variety of channel characteristics from very low to optical frequencies. This book offers system analysis and subsystem implementation options for acquisition and data detection appropriate to the channel conditions and system specifications, and provides test methods for demonstrating system performance. This book also: Outlines fundamental system requirements and related analysis that must be established prior to a detailed subsystem design Includes many examples that highlight various analytical solutions and case studies that characterize various system performance measures Discusses various aspects of atmospheric propagation using the spherical 4/3 effective earth radius model Examines Ionospheric propagation and uses the Rayleigh fading channel to evaluate link performance using several robust waveform modulations Contains end-of-chapter problems, allowing the reader to further engage with the text Digital Communications with Emphasis on Data Modems is a great resource for communication-system and digital signal processing engineers and students looking for in-depth theory as well as practical implementations.

**Wireless Sensor Networks**

**The Mathematical Theory of Communication**

Building on the success of the first edition, which offered a practical introductory approach to the techniques of error concealment, this book, now fully revised and updated, provides a comprehensive treatment of the subject and includes a wealth of additional features. The Art of Error Correcting Coding, Second Edition explores intermediate and advanced level concepts as well as those which will appeal to the novice. All key topics are discussed, including Reed-Solomon codes, Viterbi decoding, soft-output decoding algorithms, MAP, log-MAP and MAX-log-MAP. Reliability-based algorithms GMD and Chase are examined, as are turbo codes, both serially and parallel concatenated, as well as low-density parity-check (LDPC) codes and their iterative decoders. Features additional problems at the end of each chapter and an instructor’s solutions manual. Updated companion website offers new C/C ++ programs and MATLAB scripts, to help with the understanding and implementation of basic ECC techniques. Easy to follow examples illustrate the fundamental concepts of error correcting codes. Basic analysis tools are provided throughout to help in the assessment of the error performance block and convolutional codes of a particular error correcting coding (ECC) scheme for a selection of the basic channel models. This edition provides an essential resource to engineers, computer scientists and graduate students alike for understanding and applying ECC techniques in the transmission and storage of digital information.

**Introduction to 3G Mobile Communications**

The core ideas of the thesis are employing Forward Error Correction (FEC) coding, and specifically polar codes, as opposed to two-way communication for information reconciliation in QKD schemes, exploiting all the available information for data processing at the receiver including information available from the quantum channel, since optimized use of this information can lead to significant performance improvement, and providing a security versus secret-key rate trade-off to the end-user within the context of QKD systems.
Digital Broadcasting

The demand for wireless access to network services is growing in virtually all communications and computing applications. Once accustomed to unattended operation, users resent being tied to a desk or a fixed location, but will endure it when there is some substantial benefit, such as higher resolution or bandwidth. Recent technological advances, however, such as the scaling of VLSI, the development of low-power circuit design techniques and architectures, increasing battery energy capacity, and advanced displays, are rapidly improving the capabilities of wireless devices. Many of the technological advances contributing to this revolution pertain to the wireless medium itself. There are two viable media: radio and optical. In radio, spread-spectrum techniques allow different users and services to coexist in the same bandwidth, and new microwave frequencies with plentiful bandwidth become viable as the speed of the supporting low-cost electronics increases. Radio has the advantage of being available ubiquitously indoors and outdoors, with the possibility of a seamless system infrastructure that allows users to move between the two. There are unanswered (but likely to be benign) biological effects of microwave radiation at higher power densities. Optical communications is enhanced by advances in photonic devices, such as semiconductor lasers and detectors. Optical is primarily an indoor technology - where it need not compete with sunlight - and offers advantages such as the immediate availability of a broad bandwidth without the need for regulatory approval.

Mobile Lightweight Wireless Systems

Essentials of Error-Control Coding Techniques presents error-control coding techniques with an emphasis on the most recent applications. It is written for engineers who use or build error-control coding equipment. Many examples of practical applications are provided, enabling the reader to obtain valuable expertise for the development of a wide range of error-control coding systems. Necessary background knowledge of coding theory (the theory of error-correcting codes) is also included so that the reader is able to assimilate the concepts and the techniques. The book is divided into two parts. The first provides the reader with the fundamental knowledge of the coding theory that is necessary to understand the material in the latter part. Topics covered include the principles of error detection and correction, block codes, and convolutional codes. The second part is devoted to the practical applications of error-control coding in various fields. It explains how to design cost-effective error-control coding systems. Many examples of actual error-control coding systems are described and evaluated. This book is particularly suited for the engineer striving to master the practical applications of error-control coding. It is also suitable for use as a graduate text for an advanced course in coding theory.

Springer Handbook of Optical Networks

Highlighting satellite and earth station design, links and communication systems, error detection and correction, and regulations and procedures for system modeling, integrations, testing, and evaluation, Satellite Communication Engineering provides a simple and concise overview of the fundamental principles common to information communications. It

FPGA Implementation of Reed Solomon Codec for 40Gbps Forward Error Correction in Optical Networks

Superdense coding promises increased classical capacity and communication security but this advantage may be undermined by noise in the quantum channel. We present a numerical study of how forward error correction (FEC) applied to the encoded classical message can be used to mitigate against quantum channel noise. By studying the bit error rate under different FEC codes, we identify the unique role that burst errors play in superdense coding, and we show how these can be mitigated against by interleaving the FEC codewords prior to transmission. As a result, we conclude that classical FEC with interleaving is a useful method to improve the performance in near-term demonstrations of superdense coding.

Principles of LED Light Communications

Broadcast television began in Japan in 1953. Since then the presence of television has continued to grow and TV broadcasts are the most familiar source of information for most people. This book compiles the fundamentals of digital broadcast, which has developed since the advent of text caption broadcasting in 1985, it also looks at other advanced technology including terrestrial broadcast, satellite broadcast and CATV - cable television.
Data and Computer Communications

This second edition provides first-hand information about the most recent developments in the exciting and fast moving field of telecommunications media and consumer electronics. The DVB group developed the standards which are being used in Europe, Australia, Southeast Asia, and many other parts of the world. Some 150 major TV broadcasting companies as well as suppliers for technical equipment are members of the project. This standard is expected to be accepted for worldwide digital HDTV broadcasting. This book is readable for non-experts with a background in analog transmission, and demonstrates the fascinating possibilities of digital technology. For the second edition, the complete text has been up-dated thoroughly. The latest DVB standards are included in three new sections on Interactive Television, Data Broadcasting, and The Multimedia Home Platform.

Essentials of Error-Control Coding Techniques

Turbo Code Applications: a journey from a paper to realization presents contemporary applications of turbo codes in thirteen technical chapters. Each chapter focuses on a particular communication technology utilizing turbo codes, and they are written by experts who have been working in related th areas from around the world. This book is published to celebrate the 10 year anniversary of turbo codes invention by Claude Berrou Alain Glavieux and Punya Thitimajshima (1993-2003). As known for more than a decade, turbo code is the astonishing error control coding scheme which its performance closes to the Shannon’s limit. It has been honored consequently as one of the seventeen great innovations during the ?rst fifty years of information theory foundation. With the amazing performance compared to that of other existing codes, turbo codes have been adopted into many communication systems and incorporated with various modern industrial standards. Numerous research works have been reported from universities and advance companies worldwide. Evidently, it has successfully revolutionized the digital communications. Turbo code and its successors have been applied in most communications starting from groundterrestrial systems of data storage, ADSL modem, and fiber optic communications. Subsequently, it moves up to the air channel applications by employing to wireless communication systems, and then rises up to the space by using in digital video broadcasting and satellite communications. Undoubtedly, with the excellent error correction potential, it has been selected to support data transmission in space exploring system as well.

Error Control Coding

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