

A Novel Cordic Algorithm For Fixed Angle Rotation

The idea of the 1st International Conference on Intelligent Computing and Applications (ICICA 2014) is to bring the Research Engineers, Scientists, Industrialists, Scholars and Students together from in and around the globe to present the on-going research activities and hence to encourage research interactions between universities and industries. The conference provides opportunities for the delegates to exchange new ideas, applications and experiences, to establish research relations and to find global partners for future collaboration.

The proceedings covers latest progresses in the cutting-edge research on various research areas of Image, Language Processing, Computer Vision and Pattern Recognition, Machine Learning, Data Mining and Computational Life Sciences, Management of Data including Big Data and Analytics, Distributed and Mobile Systems including Grid and Cloud infrastructure, Information Security and Privacy, VLSI, Electronic Circuits, Power Systems, Antenna, Computational fluid dynamics & Heat transfer, Intelligent Manufacturing, Signal Processing, Intelligent Computing, Soft Computing, Bio-informatics, Bio Computing, Web Security, Privacy and E-Commerce, E-governance, Service Orient Architecture, Data Engineering, Open Systems, Optimization, Communications, Smart wireless and sensor Networks, Smart Antennae, Networking and Information security, Machine Learning, Mobile Computing and Applications, Industrial Automation and MES, Cloud Computing, Green IT, IT for Rural Engineering, Business Computing, Business Intelligence, ICT for Education for solving hard problems, and finally to create awareness about these domains to a wider audience of practitioners.

The approach adopted in Digital Synthesizers and Transmitters for Software Radio will provide an understanding of key areas in the field of digital synthesizers and transmitters. It is easy to include different digital techniques in the digital synthesizers and transmitters by using digital signal processing methods, because the signal is in digital form. By programming the digital synthesizers and transmitters, adaptive channel bandwidths, modulation formats, frequency hopping and data rates are easily achieved. Techniques such as digital predistortion for power amplifier linearization, digital compensation methods for analog I/Q modulator nonlinearities and digital power control and ramping are presented in this book. The flexibility of the digital synthesizers and transmitters makes them ideal as signal generators for software radio. Software radios represent a major change in the design paradigm for radios in which a large portion of the functionality is implemented through programmable signal processing devices, giving the radio the ability to change its operating parameters to accommodate new features and capabilities. A software radio approach reduces the content of radio frequency (RF) and other analog components of traditional radios and emphasizes digital signal processing to enhance overall transmitter flexibility. Software radios are emerging in commercial and military infrastructure.

Application Specific Processors is written for use by engineers who are developing specialized systems (application specific systems). Traditionally, most high performance signal processors have been realized with application specific processors. The explanation is that application specific processors can be tailored to exactly match the (usually very demanding) application requirements. The result is that no 'processing power' is wasted for unnecessary capabilities and maximum performance is achieved. A disadvantage is that such processors have been expensive to design since each is a unique design that is customized to the specific application. In the last decade, computer-aided design systems have been developed to facilitate the development of application specific integrated circuits. The success of such ASIC CAD systems suggests that it should be possible to streamline the process of application specific processor design.

Application Specific Processors consists of eight chapters which provide a mixture of techniques and examples that relate to application specific processing. The inclusion of techniques is expected to suggest additional research and to assist those who are faced with the requirement to implement efficient application specific processors. The examples illustrate the application of the concepts and demonstrate the efficiency that can be achieved via application specific processors. The chapters were written by members and former members of the application specific processing group at the University of Texas at Austin. The first five chapters relate to specific arithmetic which often is the key to achieving high performance in application specific processors. The next two chapters focus on signal processing systems, and the final chapter examines the interconnection of possibly disparate elements to create systems.

An Investigation Into Angle Coding in the CORDIC Algorithm

Accurate Function Approximation Using the Cordic Algorithm and Its Applications

Proceedings

Efficient Hardware Implementation of the Cordic Algorithm

Masters Theses in the Pure and Applied Sciences

17th National Conference, NCCET 2013, Xining, China, July 20-22, 2013. Revised Selected Papers

This book constitutes the refereed proceedings of the 23rd International Symposium on VLSI Design and Test, VDAT 2019, held in Indore, India, in July 2019. The 63 full papers were carefully reviewed and selected from 199 submissions. The papers are organized in topical sections named: analog and mixed signal design; computing architecture and security; hardware design and optimization; low power VLSI and memory design; device modelling; and hardware implementation.

A comprehensive guide to the fundamental concepts, designs, and implementation schemes, performance considerations, and applications of arithmetic circuits for DSP Arithmetic Circuits for DSP Applications is a complete resource on arithmetic circuits for digital signal processing (DSP). It covers the key concepts, designs and developments of different types of arithmetic circuits, which can be used for improving the efficiency of implementation of a multitude of DSP applications. Each chapter includes various applications of the respective class of arithmetic circuits along with information on the future scope of research. Written for students, engineers, and researchers in electrical and computer engineering, this comprehensive text offers a clear understanding of different types of arithmetic circuits used for digital signal processing applications. The text includes contributions from noted researchers on a wide range of topics, including a review of circuits used in implementing basic operations like additions and multiplications; distributed arithmetic as a technique for the multiplier-less implementation of inner products for DSP applications; discussions on look up table-based techniques and their key applications; CORDIC circuits for calculation of trigonometric, hyperbolic and logarithmic functions; real and complex multiplications, division, and square-root; solution of linear systems; eigenvalue estimation; singular value decomposition; QR factorization and many other functions through the use of simple shift-add operations; and much more. This book serves as a comprehensive resource, which describes the arithmetic circuits as fundamental building blocks for state-of-the-art DSP and reviews in - depth the scope of their applications.

Abstract: "This paper describes a modification to the three dimensional CORDIC algorithm using an approximation of the Taylor series. The modification has the potential to reduce the number of iterations required for a three dimensional CORDIC operation by at least 25%. The approach used is based upon a modification of the two dimensional CORDIC algorithm originally suggested by H.M. Ahmed[1]."

Digital Signal Processing for Multimedia Systems

14th International Conference , FPL 2004, Leuven, Belgium, August 30-September 1, 2004, Proceedings

*Implementation of Improved CORDIC Algorithm for Rotation and Vectoring
Arithmetic and Algebraic Circuits*

23rd International Symposium, VDAT 2019, Indore, India, July 4-6, 2019, Revised Selected Papers

Signal Processing and Analysis of Electrical Circuit

Second Edition of successful, well-reviewed Birkhauser book, which sold 866 copies in North America Provides an up-to-date presentation by including new results, examples, and problems throughout the text The second edition adds a chapter on multiple-precision arithmetic, and new algorithms invented since 1997

The 24 chapters in this book provides a deep overview of robotics and the application of AI and IoT in robotics. It contains the exploration of AI and IoT based intelligent automation in robotics. The various algorithms and frameworks for robotics based on AI and IoT are presented, analyzed, and discussed. This book also provides insights on application of robotics in education, healthcare, defense and many other fields which utilize IoT and AI. It also introduces the idea of smart cities using robotics.

Masters Theses in the Pure and Applied Sciences was first conceived, published, and disseminated by the Center for Information and Numerical Data Analysis and Synthesis (CINDAS) at Purdue University in 1957, starting its coverage of theses with the academic year 1955. Beginning with Volume 13, the printing and dissemination phases of the activity were transferred to University Microfilms/Xerox of Ann Arbor, Michigan, with the thought that such an arrangement would be more beneficial to the academic and general scientific and technical community. After five years of this joint undertaking we had concluded that it was in the interest of all concerned if the printing and distribution of the volumes were handled by an international publishing house to assure improved service and broader dissemination. Hence, starting with Volume 18, Masters Theses in the Pure and Applied Sciences has been disseminated on a worldwide basis by Plenum Publishing Corporation of New York, and in the same year the coverage was broadened to include Canadian universities. All back issues can also be ordered from Plenum. We have reported in Volume 39 (thesis year 1994) a total of 13,953 thesis titles from 21 Canadian and 159 United States universities. We are sure that this broader base for these titles reported will greatly enhance the value of this important annual reference work. While Volume 39 reports theses submitted in 1994, on occasion, certain universities do report theses submitted in previous years but not reported at the time.*

Accepted by Colleges and Universities of the United States and Canada Volume 39

Extended Papers

Proceedings of International Conference on VLSI, Communication, Advanced Devices, Signals & Systems and Networking (VCASAN-2013)

A Study of Scaling Operations and Decomposed Search for CORDIC Algorithm

A Practical Approach

Application Specific Processors

This book has a detailed review on CORDIC algorithm. It's VLSI Architecture, VHDL Implementation and Application as DFT implementation. I want to dedicate my work to my parents and family members whose constant encouragement and blessings have kept myself motivating to write this book. I am also thankful to the authors whose works I have consulted and quoted in this work. Last, but not the least, very special thanks to my friends for their patience and understanding without which this study would not have been in this present form, is greatly appreciated.

This book contains the papers presented at the 14th International Conference on Field Programmable Logic and Applications (FPL) held during August 30th- September 1st 2004. The conference was hosted by the Interuniversity Micro- Electronics Center (IMEC) in Leuven, Belgium. The FPL series of conferences was founded in 1991 at Oxford University (UK), and has been held annually since: in Oxford (3 times), Vienna, Prague, Darmstadt, London, Tallinn, Glasgow, Villach, Belfast, Montpellier and Lisbon. It is the largest and oldest conference in reconfigurable computing and brings together academic researchers, industry experts, users and newcomers in an informal, welcoming atmosphere that encourages productive exchange of ideas and knowledge between the delegates. The fast and exciting advances in field programmable logic are increasing steadily with more and more application potential and need. New ground has been broken in architectures, design techniques, (partial) run-time reconfiguration and applications of field programmable devices in several different areas. Many of these recent innovations are reported in this volume. The size of the FPL conferences has grown significantly over the years. FPL in 2003 saw 216 papers submitted. The interest and support for FPL in the programmable logic community continued this year with 285 scientific papers submitted, demonstrating a 32% increase when compared to the year before. The technical program was assembled from 78 selected regular papers, 45 additional short papers and 29 posters, resulting in this volume of proceedings. The program also included three invited plenary keynote presentations from Xilinx, Gilder Technology Report and Altera, and three embedded tutorials from Xilinx, the University of Karlsruhe (TH) and the University of Oslo. Matrix factorizations are important in many real-time signal processing applications. In order to improve the performance of these algorithms, special purpose VLSI processor arrays are being developed. Recently, the Coordinate Rotation Digital Computer (CORDIC) algorithms have been applied to the QR Decomposition (QRD) and the Singular Value Decomposition (SVD). In this paper, the CORDIC arithmetic algorithms are extended to deal with complex data. Novel CORDIC VLSI architectures for the QRD of a complex matrix, the Eigenvalue Decomposition of a Hermitian matrix, and the SVD of a complex matrix are presented. These architectures are suitable for VLSI implementation.

Elementary Functions

Arithmetic Circuits for DSP Applications

Digital Arithmetic

Digital Synthesizers and Transmitters for Software Radio

19th International Conference, CANS 2020, Vienna, Austria, December 14–16, 2020, Proceedings

SocProS 2018, Volume 1

This book presents a complete and accurate study of arithmetic and algebraic circuits. The first part offers a review of all important basic concepts: it describes simple circuits for the implementation of some basic arithmetic operations; it introduces theoretical basis for residue number systems; and describes some fundamental circuits for implementing the main modular operations that will be used in the text. Moreover, the book discusses floating-point representation of real numbers and the IEEE 754 standard. The second and core part of the book offers a deep study of arithmetic circuits and specific algorithms for their implementation. It covers the CORDIC algorithm, and optimized arithmetic circuits recently developed by the authors for adders and subtractors, as well as multipliers, dividers and special functions. It describes the implementation of basic algebraic circuits, such as LFSRs and cellular automata. Finally, it offers a complete study of Galois fields, showing some exemplary applications and discussing the advantages in comparison to other methods. This dense, self-contained text provides students, researchers and engineers, with extensive knowledge on and a deep understanding of arithmetic and algebraic circuits and their implementation.

Very Good, No Highlights or Markup, all pages are intact.

Addressing current issues of which any engineer or computer scientist should be aware, this monograph is a response to the need to adopt a new computational paradigm as the methodological basis for designing pervasive embedded systems with sensor capabilities. The requirements of this paradigm are to control complexity, to limit cost and energy consumption and to provide adaptation and cognition abilities allowing the embedded system to interact proactively with the real world. The quest for such intelligence requires the formalization of a new generation of intelligent systems able to exploit advances in digital architectures and in sensing technologies. The book sheds light on the theory behind intelligence for embedded systems with specific focus on: · robustness (the robustness of a computational flow and its evaluation); · intelligence (how to mimic the adaptation and cognition abilities of the human brain), · the capacity to learn in non-stationary and evolving environments by detecting changes and reacting accordingly; and · a new paradigm that, by accepting results that are correct in probability, allows the complexity of the embedded application to be kept under control. Theories, concepts and methods are provided to motivate researchers in this exciting and timely interdisciplinary area. Applications such as porting a neural network from a high-precision platform to a digital embedded system and evaluating its robustness level are described. Examples show how the

methodology introduced can be adopted in the case of cyber-physical systems to manage the interaction between embedded devices and physical world. Researchers and graduate students in computer science and various engineering-related disciplines will find the methods and approaches propounded in Intelligence for Embedded Systems of great interest. The book will also be an important resource for practitioners working on embedded systems and applications.

Hardware Implementation of Cordic Algorithm in VHDL

August 4-7, 1992, Berkeley, California

FPGA Implementation of DFT Using CORDIC Algorithm

AI and IoT-Based Intelligent Automation in Robotics

Cryptology and Network Security

Vol.2

This book aims to provide information about Fourier transform to those needing to use infrared spectroscopy, by explaining the fundamental aspects of the Fourier transform, and techniques for analyzing infrared data obtained for a wide number of materials. It summarizes the theory, instrumentation, methodology, techniques and application of FTIR spectroscopy, and improves the performance and quality of FTIR spectrophotometers.

CSISE2011 is an integrated conference concentrating its focus upon Computer Science, Intelligent System and Environment. In the proceeding, you can learn much more knowledge about Computer Science, Intelligent System and Environment of researchers all around the world. The international conference will provide a forum for engineers, scientist, teachers and all researchers to discuss their latest research achievements and their future research plan. The main role of the proceeding is to be used as an exchange pillar for researchers who are working in the mentioned field. In order to meet high standard of Springer's Advances in Intelligent and Soft Computing, the organization committee has made their efforts to do the following things. Firstly, poor quality paper has been refused after reviewing course by anonymous referee experts. Secondly, periodically review meetings have been held around the reviewers about five times for exchanging reviewing suggestions. Finally, the conference organization had several preliminary sessions before the conference. Through efforts of different people and departments, the conference will be successful and fruitful. We hope that you can get much more knowledges from our CSISE2011, and we also hope that you can give us good suggestions to improve our work in the future.

This two-volume book presents the outcomes of the 8th International Conference on Soft Computing for Problem Solving, SocProS 2018. This conference was a joint technical collaboration between the Soft Computing Research Society, Liverpool Hope University (UK), and Vellore Institute of Technology (India), and brought together researchers, engineers and practitioners to discuss thought-provoking developments and challenges in order to select potential future directions. The book highlights the latest advances and innovations in the interdisciplinary areas of soft computing, including original research papers on algorithms (artificial immune systems, artificial neural networks, genetic algorithms, genetic programming, and particle swarm optimization) and applications (control systems, data mining and clustering, finance, weather forecasting, game theory, business and forecasting applications). It offers a valuable resource for both young and experienced researchers dealing with complex and intricate real-world problems that are difficult to solve using traditional methods.

The Bisection - Cordic Algorithm

Design and Implementation of the CORDIC Algorithm in an FPGA

Approach to Scientific Principles

Communication and Signal Processing

Advanced Materials

Digital Design of Signal Processing Systems discusses a spectrum of architectures and methods for effective implementation of algorithms in hardware (HW). Encompassing all facets, this book includes conversion of algorithms from floating-point to fixed-point format, parallel architectures for basic computational blocks, Verilog Hardware Description Language (VHDL), SystemVerilog and coding guidelines for synthesis. The book also covers system level design of Multi Processor System on Chip (MPSoC); a consideration of different design methods for Network on Chip (NoC) and Kahn Process Network (KPN) based connectivity among processing elements. A special emphasis is placed on implementing streaming applications like a communication system in HW. Several novel architectures for implementing commonly used algorithms in signal processing are also revealed. With a comprehensive coverage of topics, the book provides an appropriate mix of examples to illustrate the design methodology. Key Features: A practical guide to designing efficient digital systems, covering the complete spectrum from a digital signal processing perspective Provides a full account of HW building blocks and their architectures, while also elaborating effective use of embedded computational resources like multipliers, adders and memories in FPGAs Covers a system level architecture using NoC and KPN for streaming applications, giving examples of structuring MATLAB code and its execution in HW for these applications Explains state machine based and Micro-Program architectures with comprehensive case studies for mapping complex applications The techniques and architectures discussed in this book are used in the award winning products from the Center for Advanced Research in Engineering (CARE). Software Defined Radio, 10 Gigabit VoIP monitoring system and Digital Surveillance equipment has respectively won APICTA (Asia Pacific Information and Communication Alliance) awards in 2010 for their unique and effective designs.

This textbook presents the concepts and tools necessary to understand, build, and implement algorithms for computing elementary functions (e.g., logarithms, exponentials, and trigonometric functions). Both hardware- and software-oriented algorithms are included, along with issues related to accurate floating-point implementation. This third edition has been updated to incorporate the most recent advances in the field, new elementary function algorithms, and function software. After a preliminary chapter that briefly introduces some fundamental

computer arithmetic, such as floating-point arithmetic and redundant number systems, the text is divided into three main parts. Part I considers the computation of elementary functions using algorithms based on polynomial or rational approximations and using table-based methods; the final chapter in this section deals with basic principles of multiple-precision arithmetic devoted to a presentation of "shift-and-add" algorithms (hardware-oriented algorithms that use additions and shifts only). Issues related to accuracy, including range reduction, precision, monotonicity, and correct rounding, as well as some examples of implementation are explored in Part III. Numerous examples of command lines and full programs are provided through various software packages, including Maple, Sollya, and Gappa. New to this edition are an in-depth overview of the IEEE-754-2008 standard for floating-point arithmetic; a section on double- and triple-word numbers; a presentation of new tools for designing accurate function software; and a section on the Toom-Cook family of multiplication algorithms. The techniques presented in this book will be of interest to implementers of elementary function libraries or circuits and programmers of numerical applications. Additionally, graduate and advanced undergraduate students, computer professionals, and researchers in scientific computing, numerical analysis, software engineering, and computer engineering will find this a useful reference and resource. PRAISE FOR THE FIRST EDITIONS "[T]his book seems like an essential reference for the experts (which I'm not). More importantly, this is an interesting book for the curious (which I am). In this case, you'll find many interesting things from this book. If you teach numerical analysis or approximation theory, then this book will give you some good examples to discuss in class." — MAA Review (Second Edition) "The rich content of ideas sketched or presented in some detail in this book is supplemented by a list of over three hundred references, most of them of 1980 or more recent. The book also contains some relevant typical programs." — Zentralblatt MATH (Review of Second Edition) "I think that the book will be very valuable to students both in numerical analysis and in computer science. I found [it to be] well written and containing much interesting material, most of the time disseminated in specialized papers published in specialized journals difficult to find." — Algorithms (Review of First Edition)

The book elaborates selected, extended and peer reviewed papers on Communication and Signal Processing. As Vol. 8 of the series on "Advances on Signals, Systems and Devices" it covers topics such as: content based video retrieval, wireless communication systems, biometry and medical imaging, adaptive and smart antennae.

Theories and Applications

Signal Processing VI

Soft Computing for Problem Solving

Field Programmable Logic and Application

VLSI Design and Test

Algorithms and Implementation

Advanced materials are the basis of modern science and technology. This proceedings volume presents a broad spectrum of studies of novel materials covering their processing techniques, physics, mechanics, and applications. The book is concentrated on nanostructures, ferroelectric crystals, materials and composites, materials for solar cells and also polymeric composites. Nanotechnology approaches, modern piezoelectric techniques and also latest achievements in materials science, condensed matter physics, mechanics of deformable solids and numerical methods are presented. Great attention is devoted to novel devices with high accuracy, longevity and extended possibilities to work in wide temperature and pressure ranges, aggressive media etc. The characteristics of materials and composites with improved properties opening new possibilities of various physical processes, in particular transmission and receipt of signals under water, are described.

This book is a collection of papers presented by renowned researchers, keynote speakers, and academicians in the International Conference on VLSI, Communication, Analog Designs, Signals & Systems and Networking (VCASAN-2013), organized by B.N.M. Institute of Technology, Bangalore, India during July 17-19, 2013. The book provides global trends in cutting-edge technologies in electronics and communication engineering. The content of the book is useful to engineers, researchers, and academicians as well as industry professionals.

Elementary Functions Algorithms and Implementation Springer Science & Business Media

Digital Design of Signal Processing Systems

Physics, Mechanics and Applications

Complex Matrix Factorizations with CORDIC Arithmetic

Intelligent Computing and Applications

Proceedings of the ... Midwest Symposium on Circuits and Systems

Proceedings of the International Conference on Application Specific Array Processors

This book constitutes the refereed proceedings of the 19th International Conference on Cryptology and Network Security, CANS 2020, held in Vienna, Austria, in December 2020.* The 30 full papers were carefully reviewed and selected from 118 submissions. The papers focus on topics such as cybersecurity; credentials; elliptic curves; payment systems; privacy-enhancing tools; lightweight cryptography; and codes and lattices. *The conference was held virtually due to the COVID-19 pandemic.

This Special Issue with 35 published articles shows the significance of the topic "Signal Processing and Analysis of Electrical Circuit". This topic has been gaining increasing attention in recent times. The presented articles can be categorized into four different areas: signal processing and analysis methods of electrical circuits; electrical measurement technology; applications of signal processing of electrical equipment; fault diagnosis of electrical circuits. It is a fact that the

development of electrical systems, signal processing methods, and circuits has been accelerating. Electronics applications related to electrical circuits and signal processing methods have gained noticeable attention in recent times. The methods of signal processing and electrical circuits are widely used by engineers and scientists all over the world. The constituent papers represent a significant contribution to electronics and present applications that can be used in industry. Further improvements to the presented approaches are required for realizing their full potential.

This book constitutes the refereed proceedings of the 17th National Conference on Computer Engineering and Technology, NCCET 2013, held in Xining, China, in July 2013. The 26 papers presented were carefully reviewed and selected from 234 submissions. They are organized in topical sections named: Application Specific Processors; Communication Architecture; Computer Application and Software Optimization; IC Design and Test; Processor Architecture; Technology on the Horizon.

Advances in Computer Science, Intelligent Systems and Environment

A Methodological Approach

Proceedings of the International Conference on ICA, 22-24 December 2014

Intelligence for Embedded Systems

Field Programmable Gate Arrays of Coordinate Rotation Digital Computer Algorithm Using VHDL

Fourier Transforms

This was the sixth in the sequence of the international conferences promoted and organized by the European Association for Signal Processing. The conference has established itself as one of the world's largest and most important meetings on the subject. The 444 papers (in three volumes) are organized under 7 themes, containing the following topics: 1. Theory of Signals and Systems: a) Detection, b) Estimation, c) Filtering, d) Spectral estimation, e) Adaptive systems, f) Modeling, g) Digital transforms, h) Digital filtering. 2. Image Processing and Multidimensional Signal Processing: a) Coding, b) Enhancement, c) Restoration, d) Medical image processing. 3. Speech Processing: a) Coding, b) Synthesis, c) Recognition and understanding, d) Enhancement. 4. Implementations: a) Hardware, b) Software, c) VLSI, d) Novel Architectures, e) Array processing. 5. Knowledge Engineering and Signal Processing: a) Expert systems, b) Pattern recognition, c) Signal interpretation, d) Image understanding. 6. Neural Networks for Signal Processing: a) Theory, b) Speech, c) Vision, d) Implementations. 7. Applications: a) Radar, b) Sonar, c) Communications, d) Geophysics, e) Digital audio, f) Biomedics, g) Sensing, h) Robotics, i) Astrophysics, j) Mechanics, k) other. The diversity of topics in this 3-volume set, as well as the extraordinary tempo at which Signal Processing has progressed, attest to the permanent vitality of this area of research and development. Workers in signal processing will find in these papers the latest advances and results, as well as indications on future research and analysis in this rapidly developing field.

Addresses a wide selection of multimedia applications, programmable and custom architectures for the implementations of multimedia systems, and arithmetic architectures and design methodologies. The book covers recent applications of digital signal processing algorithms in multimedia, presents high-speed and low-priority binary and finite field arithmetic architectures, details VHDL-based implementation approaches, and more.

The authoritative reference on the theory and design practice of computer arithmetic.

Three Dimensional CORDIC with Reduced Iterations

Computer Engineering and Technology