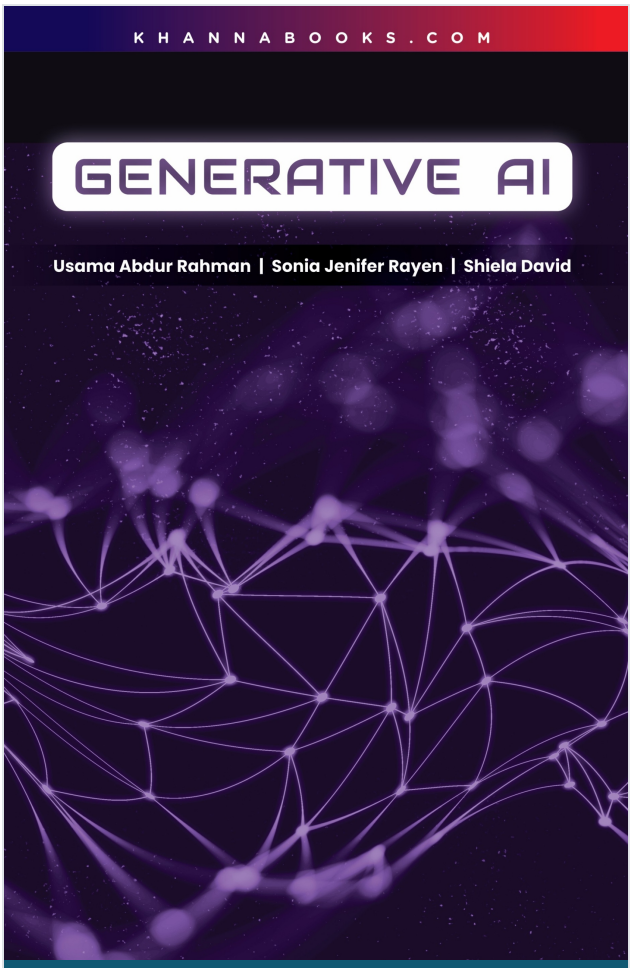


Sonia Jenifer Rayen, Shiela David, Usama Abdur Rahman

Generative AI

Author :	Sonia Jenifer Rayen, Shiela David, Usama Abdur Rahman
ISBN 13 :	978-93-55387-42-4
ISBN 10 :	9355387423
E-ISBN 13 :	978-93-55387-42-4
Edition :	First
Pages :	112
Type of book :	Physical
Year :	2026
Language :	English
Publisher :	Khanna Publishing House
M.R.P :	Rs 248.00
Categories :	Computer Science Engineering, New Arrivals, Book Store, Sathyabama Series
Condition Type :	New
Country Origin :	India

Khanna Publishing House

4C/4344, Ansari Road, Daryaganj, New Delhi-110002

Email: contact@khannabooks.com | Tel: 011-2324 44 47 - 48 | Mobile: +91-99109 09320

Product Description

Generative AI (Gen AI) has rapidly evolved from a theoretical concept into a transformative technology capable of simulating human creativity, generating content, producing innovative ideas, and enabling autonomous decision-making. This book serves as a comprehensive and structured guide to understanding the foundations, architectures, applications, and future directions of Generative Artificial Intelligence. Designed for students, researchers, professionals, and technology enthusiasts, it provides both theoretical insights and practical perspectives on one of the most influential fields in modern computing.

The text begins by tracing the historical evolution of Artificial Intelligence, highlighting key milestones that shaped the development of machine learning and intelligent systems. It then builds a strong conceptual foundation by introducing Neural Networks and the revolutionary Transformer Architecture, which forms the backbone of modern generative systems. Special emphasis is placed on the Attention Mechanism, encoder-decoder architectures, and the emergence of Large Language Models (LLMs) that power advanced conversational and content-generation systems.

Beyond foundational concepts, the book explores advanced generative techniques such as Generative Adversarial Networks (GANs) and Variational Autoencoders (VAEs), explaining their architectures, workflows, and practical applications. Readers gain insights into how generative models create realistic text, images, and multimedia content, while also understanding the principles behind AI Agents, prompt engineering, and modern AI development frameworks.

The practical relevance of Generative AI is demonstrated through extensive real-world applications across healthcare, finance, manufacturing, software engineering, media, and entertainment. The text also addresses critical contemporary topics including model

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evaluation metrics, ethical considerations, responsible AI development, and emerging innovations such as Quantum AI and Neuromorphic Computing. By combining academic rigor with practical implementation, this book provides a complete roadmap for mastering the rapidly evolving landscape of Generative Artificial Intelligence.

Salient Features:

- Foundational AI Concepts: Provides a detailed overview of the history and evolution of Artificial Intelligence, establishing a strong foundation in neural networks, machine learning, and the development of generative technologies.
- Transformer Architecture Deep Dive: Thoroughly explains Transformer Models, the Attention Mechanism, and the distinctions between encoder-based architectures (such as BERT) and decoder-based Large Language Models.
- Large Language Model Mastery: Covers the principles, architectures, and applications of LLMs, including their use in natural language processing, content generation, summarization, translation, and conversational AI systems.
- Advanced Generative Models: Presents comprehensive coverage of Variational Autoencoders (VAEs) and Generative Adversarial Networks (GANs), detailing their components, workflows, training methodologies, and practical applications.
- Practical AI Agents & Frameworks: Introduces AI Agents and modern development frameworks such as Lang Chain, enabling readers to build scalable and production-ready Generative AI applications.
- Cross-Industry Applications: Demonstrates the transformative impact of Generative AI across multiple sectors, including healthcare, manufacturing, finance, software development, and digital media.
- Model Evaluation Techniques: Explains important evaluation metrics such as Perplexity, BLEU Score, and ROUGE Score, helping readers assess and benchmark the performance of generative and language models.

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- Future & Ethical Directions: Explores emerging topics including Multimodal AI, prompt optimization techniques (Top-K and Top-P sampling), ethical AI practices, Quantum AI, and Neuromorphic Computing.

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- Introduction to Generative AI
- Transformer
- Large Language Models (LLMs)
- Image Generation
- Model Evaluation and Future of Generative AI

Author

Sonia Jenifer Rayen

Sonia Jenifer Rayen, Associate Professor, Dept of CSE, Sathyabhama Institute of Science and Technology

Shiela David

Shiela David

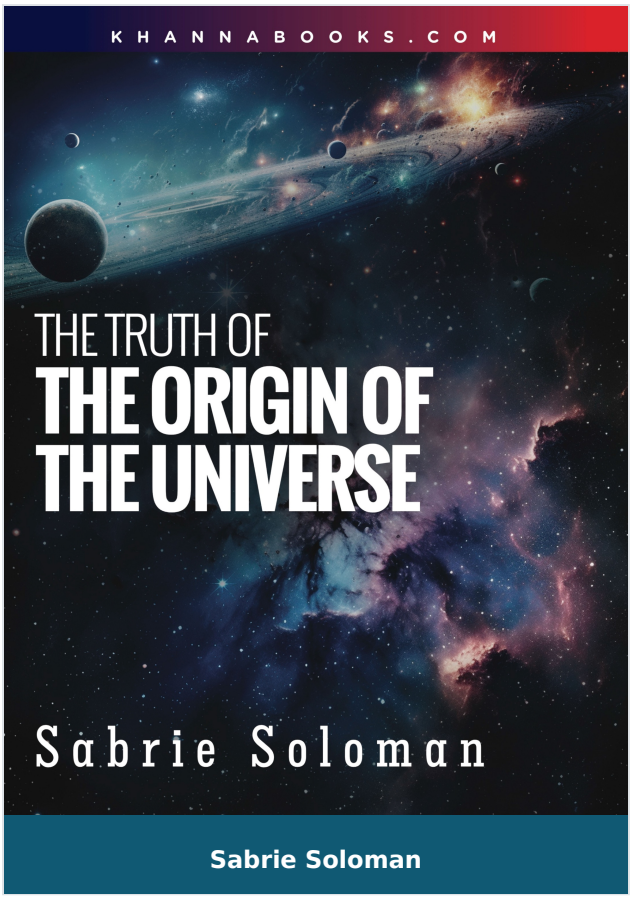
Usama Abdur Rahman

Usama Abdur Rahman

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The Truth of The Origin of The Universe

Author :	Sabrie Soloman
ISBN 13 :	978-93-55382-02-3
ISBN 10 :	9355382023
E-ISBN 13 :	978-93-55382-02-3
Edition :	1
Pages :	1606
Type of book :	Physical
Year :	2025
Language :	English
Publisher :	Khanna Publishing House
M.R.P :	Rs 4,998.00
Categories :	New Arrivals, Book Store, Science & Cosmology
Condition Type :	New
Country Origin :	India

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Product Description

In a world filled with scientific explanation and theories, it can be easy to lose sight of the ultimate truth of our existence. The truth is that the universe, with all its intricate complexities, did not come into being by mere chance or a random explosion. It was carefully designed and orchestrated by a higher power, a Creator who holds everything together.

When we look up at the night sky and see the countless stars and galaxies stretching out into infinity, we cannot help but be in awe of the sheer magnitude and beauty of it all. The heavens declare the glory of God, as it says in the Bible, and remind us of the greatness of the one who made it all.

The theory of the Big Bang, which posits that universe began as a singular point and expanded over billions of years, is a flawed is a explanation for the origin of the universe. It fails to account for the intricate design and order that we see in the cosmos, as well as the existence of life on earth. The marvel of our planet Earth, with its perfect conditions for sustaining life, points to a Creator who had a purpose and a plan in mind when he made it. The countless galaxies and stars that we observe in the universe are a testament to the power and creativity of God. They show us that we are part of a vast and wondrous creation, one that was made by an intelligent designer who had a vision for it all.

The theory of evolution, put forth by Charles by Charles Darwin, is another flawed explanation for the diversity of life on earth. It fails on earth it fails to explain the intricate complexities of living organisms and their unique design, as well as the existence of the human soul. It is clear that we are not the product of blind chance or random mutations, but rather the handiwork of a loving and powerful Creator.

"The truth of the origin of the universe" points to a creator who holds everything together and has a purpose and a plan for it all. God stretches out the heavens and allows light to

reach us here on earth, showing us his care and provision for his creation. We are not the product of blind evolution, but rather the cherished creation of a loving god who made us in his image. Let us never forget the marvel and wonder of the universe and the greatness of the one who made it all.

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Author

Sabrie Soloman

Dr. Sabrie Soloman, Ph.D., Sc.D., MBA, PE - He is the Chairman & CEO of American SensoR x, In, USA; Founder of Advanced Manufacturing Post Graduate Studies at Columbia University, USA; Professor of Advanced Technology at Columbia, where he lectures on Sensors & Control Systems in Manufacturing, Affordable Automation, Computer Integrated Manufacturing (CIM), Flexible Manufacturing System (FMS), Design for Manufacturability, Introduction to Electromechanical Engineering, Modern Welding Technology, and 3D Printing/Bioprinting Technology. Dr. Soloman authored numbers of technical books published and translated worldwide: Sensors Handbook (2nd edition), Sensors and Control Systems in Manufacturing (2nd edition), Affordable Automation, Introduction to Electromechanical Engineering, Modern Welding Technology, to name a few. Dr. Soloman holds numerous Patents, Technical Awards, and several US Product Registrations. He is a Fellow of the Society of Manufacturing Engineers. USA. The Royal Society of Manufacturing Engineers (England), and L'Ores Des Ingenieurs Du Quebec (Canada), He received several awards from the American Society of Mechanical Engineers (ASME), the Society of Manufacturing Engineers (SME), and the American Management Association (AMA). Dr. Soloman is considered an international authority on advanced manufacturing technology, robotics, biomedical engineering, pharmaceuticals, and automation in the microelectronic, automotive, beef, pork, poultry industries. He has been and continues to be instrumental in developing and implementing several industrial and modernization programs through the United Nation to European, Asian, and African countries. He is the first to introduce and implement unmanned flexible

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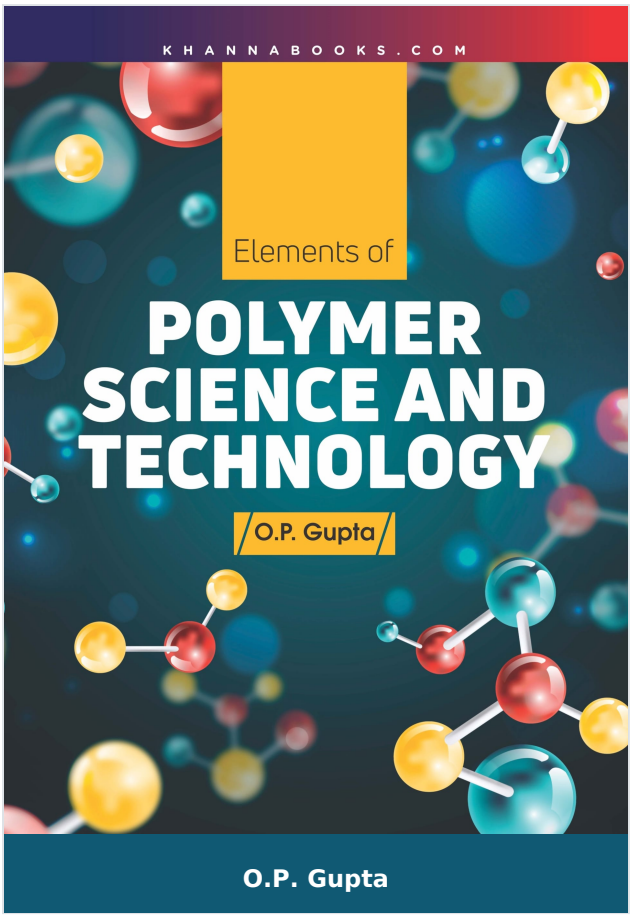
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synchronous/asynchronous manufacturing systems the microelectronic and meat industries, and the first to incorporate advanced vision technology in a wide array of robot/micro-robot manipulators. Dr. Soloman was selected to deliver the US Presidential closing address, "Innovative Remote Sensors Technologies," at the Universal Design Conference, New York, USA

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Elements of Polymer Science and Technology

Author :	O.P. Gupta
ISBN 13 :	978-93-55384-56-0
ISBN 10 :	9355384564
E-ISBN 13 :	978-93-55384-56-0
Edition :	1
Pages :	340
Type of book :	Physical
Year :	2025
Language :	English
Publisher :	Khanna Publishing House
M.R.P :	Rs 475.00
Categories :	Chemical Engineering, New Arrivals, Book Store
Condition Type :	New
Country Origin :	India

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Product Description

This book covers the manufacture, properties of important polymers-plastics, rubbers & synthetic fibers. Important Information about various raw materials used for polymer industries, various polymers processing technologies & status of Indian polymer industry are also included. It also contains short questions & answers and multiple- choice questions & answers drawn from the examination papers of various engineering colleges for the benefits of the students.

This book is targeted to benefit the following:

1. Diploma in engineering student.
2. Degree in engineering students.
3. AMIE , AMIIM , AMIICHE Students.
4. MSc. & B.Sc. Students.
5. Faculty members and teaching staff.
6. Practicing engineers / Professionals.

The scope and coverage of subject matter presented can be gauged from glancing the contents portion of the book to judge its suitability and relevance for a particular target group of reader. Extensive use of internet resources has been made in gathering the relevant information and the subject matter has been presented in a simple, lucid and easy to understand manner for easy grasping of the subject.

Latest and updated information /data/ statistics pertaining to the subject matter has been included in this edition for the benefit of the readers.

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- Manufacture, Properties & Applications of Important Elastomers (Rubbers).
- Manufacture, Properties & Applications of Important Synthetic Fibers.
- Appendices

Author

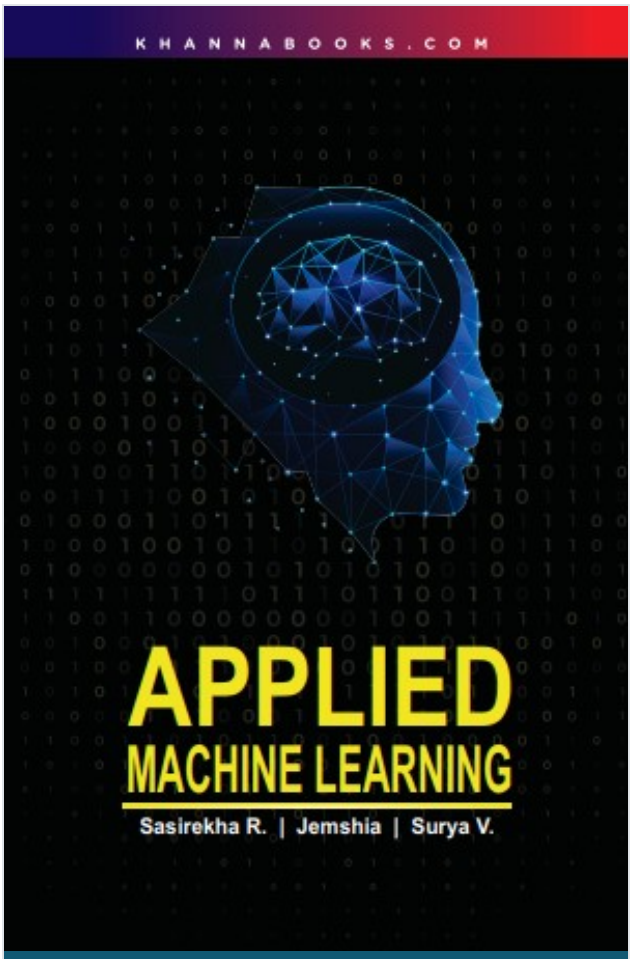
O.P. Gupta

O.P. Gupta Om Prakash Gupta is basically being a chemical engineer, he has a practising experience of efficient Ennergy management and HR functions in steel Industry for more than three decades. privileged to be the youngest writer of technical books in the country (for he had written his first book at the age of 24 years while doing M. Tech. at I.I.T kanpur in 1979), he has authored many frontline books for engineering students. besides, being the regular faculty member in technical courses for Management Trainees (Technical), he has also visited england and france on a study tour sponsored by United Nations Development Programme (UNDP) to study the scope of energy conservation in steel plants in 1987.

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Sasirekha R., Jemshia, Surya V., Pavithrababu

Applied Machine Learning

Author :	Sasirekha R., Jemshia, Surya V., Pavithrababu
ISBN 13 :	978-93-55388-42-1
ISBN 10 :	935538842X
E-ISBN 13 :	978-93-55388-42-1
Edition :	First
Pages :	96
Type of book :	Physical
Year :	2026
Language :	English
Publisher :	Khanna Publishing House
M.R.P :	Rs 148.00
Categories :	New Arrivals, Book Store, Sathyabama Series
Condition Type :	New
Country Origin :	India

Khanna Publishing House

4C/4344, Ansari Road, Daryaganj, New Delhi-110002

Email: contact@khannabooks.com | Tel: 011-2324 44 47 - 48 | Mobile: +91-99109 09320

Product Description

Applied Machine Learning

In an era where data is growing exponentially, Machine Learning (ML) has become the definitive tool for solving complex problems across every major industry, from healthcare and finance to autonomous systems and natural language processing.

Applied Machine Learning is designed to bridge the gap between theoretical research and real-world implementation. This book provides a solid foundation, covering core concepts such as supervised and unsupervised learning, feature engineering, and model evaluation. Readers will gain a deep understanding of essential algorithms like linear regression, decision trees, support vector machines, and neural networks.

With a crucial focus on practical application, the text uses Python and industry-standard libraries like Scikit-learn, TensorFlow, and PyTorch to provide step-by-step coding examples. Beyond model development, it addresses critical challenges, including data bias, model interpretability, and ethical considerations, emphasizing the need to build responsible and transparent ML systems. Whether you are an aspiring data scientist, a software engineer, or a business leader, this book is your comprehensive guide to leveraging AI-driven insights and transforming industries.

Salient Features:

- **Foundational Learning Paradigms**: Detailed coverage of Supervised, Unsupervised, Semi-Supervised, and Reinforcement Learning models and their real-world applications.
- **Essential Algorithms**: In-depth study of core algorithms, including K-Means Clustering, Fuzzy K-Means, Decision Trees, and various Neural Network architectures.

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- **Practical Implementation**: Hands-on focus on Python programming and popular ML libraries (Scikit-learn, TensorFlow, PyTorch) for effective solution deployment.
- **Data Strategy**: Comprehensive chapters on Data Representation, covering structured vs. unstructured data, feature engineering, normalization, and techniques for handling missing data.
- **Model Optimization**: Clear explanation of the Bias-Variance Tradeoff and the Occam's Razor principle for selecting models that achieve optimal generalization.
- **Statistical Backbone**: Exploration of the statistical foundations of ML, including Probability Theory, Bayes' Theorem, Sampling Methods, and Inferential Statistics.
- **Business Applications**: Includes units on Business Intelligence (BI), Data Warehousing, OLAP, the CRISP-DM Model, and Intelligent Information Retrieval Systems.
- **Future Trends**: Analysis of the latest Applications and Trends of Machine Learning across key sectors like Healthcare, Finance, E-commerce, and Autonomous Systems.

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- Business Intelligence and Data Mining

Author

Sasirekha R.

Sasirekha R., Jemshia, Surya V.

Jemshia

Jemshia, Surya V.

Surya V.

Sasirekha R., Jemshia, Surya V.

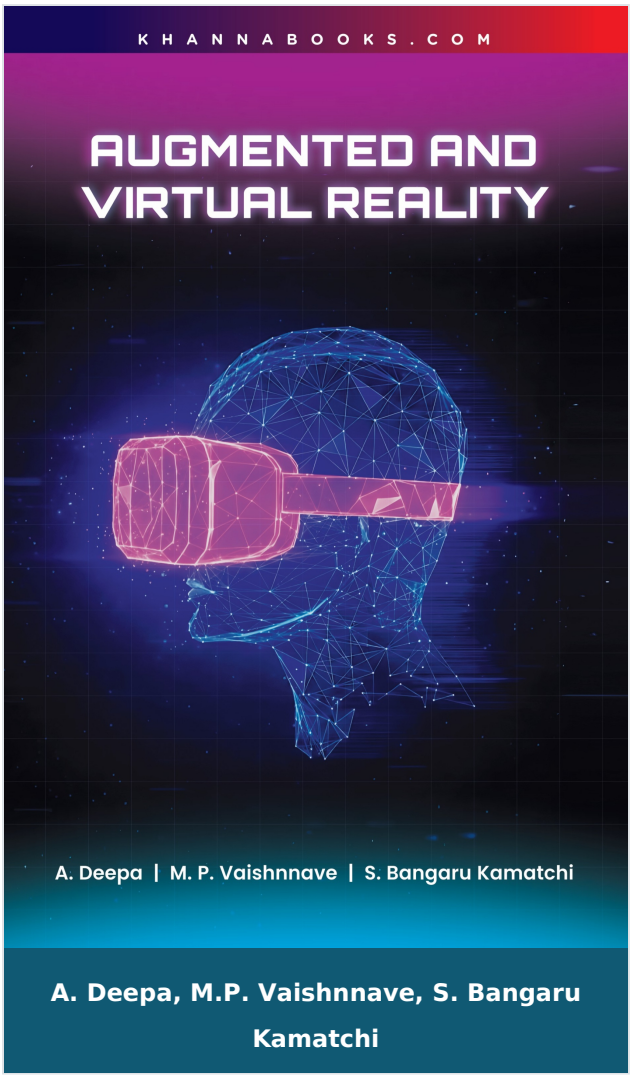
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Augmented and Virtual Reality

Author :	A. Deepa, M.P. Vaishnnave, S. Bangaru Kamatchi
ISBN 13 :	978-93-55387-83-7
ISBN 10 :	9355387830
E-ISBN 13 :	978-93-55387-83-7
Edition :	First
Pages :	144
Type of book :	Physical
Year :	2026
Language :	English
Publisher :	Khanna Publishing House
M.R.P :	Rs 248.00
Categories :	Computer Science Engineering, New Arrivals, Book Store, Sathyabama Series
Condition Type :	New
Country Origin :	India

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Product Description

This book serves as a comprehensive guide to mastering the rapidly evolving world of Augmented Reality (AR) and Virtual Reality (VR), technologies that are fundamentally reshaping human-computer interaction. Designed to bridge the gap between theoretical knowledge and practical implementation, the core purpose of this text is to equip readers with the foundational concepts and hands-on expertise necessary to design, develop, and deploy functional AR/VR applications.

The journey begins with an exploration of the historical evolution, scope, and key distinctions of AR/VR, including the critical concepts of Immersion vs. Presence. It quickly progresses to essential design principles, focusing heavily on User Experience (UX), graphical metaphors, and prototyping within immersive environments. The practical value of this book is demonstrated through detailed instructional units on Unity, the industry-leading development platform, and its integration with the powerful AR toolset, Vuforia. Readers will gain proficiency in scripting, handling Unity Physics (Colliders and Rigidbodies), and creating interactive 3D experiences, culminating in a case study on real-time application development.

This resource is ideally intended for students, developers, designers, and enthusiasts seeking a strong, structured foothold in the AR/VR domain. It is an essential tool for those looking to harness these transformative technologies for applications across gaming, healthcare, education, and manufacturing.

Salient Features:

• Foundational Concepts: Covers the historical evolution, definitions, and scope of AR/VR, including multimodal displays and the key differentiation between Strong vs. Weak AR and Immersion vs. Presence.

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• Interaction Design: Dedicated focus on User Experience (UX) guidelines, perception, and cognition. It details how to design for user needs, apply Affordances, and perform prototype evaluation in AR/VR environments.

• Unity Development: Provides a comprehensive overview of the Unity platform, covering its interface, navigation, asset management, hierarchy, and fundamental scripting concepts using MonoBehaviours.

• Vuforia and AR: Explores the Vuforia development engine, detailing its features, setup process, and practical use for implementing Image Targeting and custom image recognition in AR applications.

• Scripting and Physics: Offers in-depth coverage of introductory and advanced scripting, focusing on manipulating components and programming interactions. It also introduces essential concepts of Unity Physics.

• Advanced Interactivity: Explains crucial implementation details like creating Trigger Events, using Colliders and Rigidbodies, and navigating world space for both objects and the user in the virtual environment.

• Real-World Applications: A final unit presents a Case Study on building a complete, real-time application using AR and VR, with applications demonstrated across fields like Education, Healthcare, and Retail.

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- Expanding on Scripting and Interactions
- Sample Question Paper

Author

A. Deepa

A. Deepa, Associate Professor, Dept of CSE, Sathyabhama Institute of Science and Technology

M.P. Vaishnnave

M.P. Vaishnnave

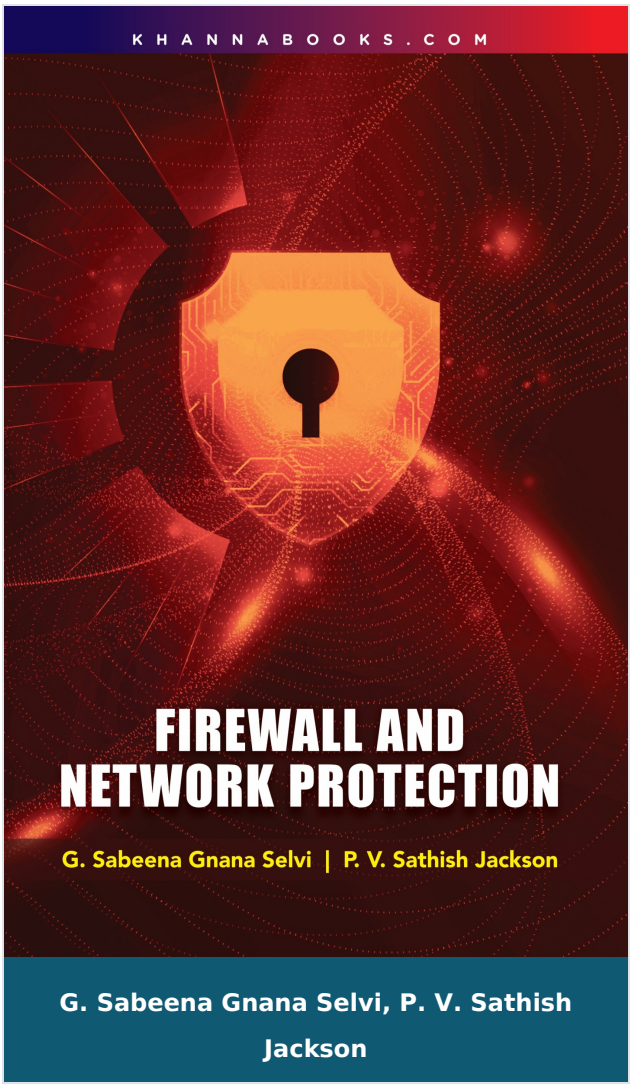
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G. Sabeena Gnana Selvi, P. V. Sathish Jackson

Firewall And Network Protection

Author :	G. Sabeena Gnana Selvi, P. V. Sathish Jackson
ISBN 13 :	978-93-55382-86-3
ISBN 10 :	9355382863
E-ISBN 13 :	978-93-55382-86-3
Edition :	First
Pages :	104
Type of book :	Physical
Year :	2026
Language :	English
Publisher :	Khanna Publishing House
M.R.P :	Rs 260.00
Categories :	New Arrivals, Book Store, Sathyabama Series
Condition Type :	New
Country Origin :	India

Product Description

Firewall And Network Protection

This book offers a comprehensive exploration of modern network security, establishing a robust foundation for protecting digital assets in today’s threat landscape. It begins by grounding readers in the essential security principles—Confidentiality, Integrity, and Availability (CIA Triad)—and outlines the current spectrum of complex threats, including ransomware and zero-day attacks, preparing readers to understand the adversary.

The content moves seamlessly from foundational theory to practical implementation. It dedicates significant coverage to the mathematics of cryptography, analyzing both symmetric ciphers like AES and asymmetric systems like RSA and Diffie-Hellman, alongside practical case studies in cryptographic solutions. Crucially, the text provides an in-depth look at implementing layered defense controls, including Intrusion Detection Systems (IDS) and the core role of Firewalls as network access controls. It details various firewall types (Packet Filtering, Stateful Inspection, and Proxy) and best practices for rule management and network segmentation. Furthermore, the book addresses securing emerging technologies such as Cloud, IoT, and Web Applications.

This resource is an invaluable guide for students in Computer Science and Cybersecurity, as well as IT and security professionals who need to design, implement, and maintain resilient security architectures in an evolving digital world.

Salient Features

- **Foundational Security Principles**: Clearly covers the core security model, the CIA Triad (Confidentiality, Integrity, Availability), and expands on essential concepts like Accountability and Non-repudiation.
- **Symmetric/Asymmetric Crypto**: Provides detailed instruction on modern cryptographic algorithms, contrasting the performance of AES with the security

offered by RSA for practical data protection.

- **Firewall Deep Dive**: Explores the characteristics and necessity of effective firewalls, detailing different types—Packet Filtering, Stateful Inspection, and Proxy—for robust perimeter defense.
- **Practical Network Defense**: Focuses on implementing layered security controls, covering the deployment and management of Intrusion Detection Systems (NIDS/HIDS) and VPNs for secure remote access.
- **Malware and Attack Taxonomy**: Categorizes and explains major network threats like DDoS, Phishing, IP Spoofing, and sophisticated malware (Ransomware), providing context for effective defense strategies.
- **Emerging Tech Security**: Addresses the unique security challenges in contemporary environments, dedicating chapters to securing Cloud infrastructure, IoT devices, and Web Applications (WAF, HSTS).
- **Cryptographic Case Studies**: Includes analysis of both successful and failed cryptographic solutions, offering essential lessons learned and promoting the use of modern, strong cryptographic protocols.

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- : Securing the Internet and Emerging Technologies
- : Combating Malicious Software and Attacks
- : Intrusion Detection and Firewalls

Author

G. Sabeena Gnana Selvi

G. Sabeena Gnana Selvi Associate Professor, Dept of CSE, Sathyabama Institute of Science and Technology

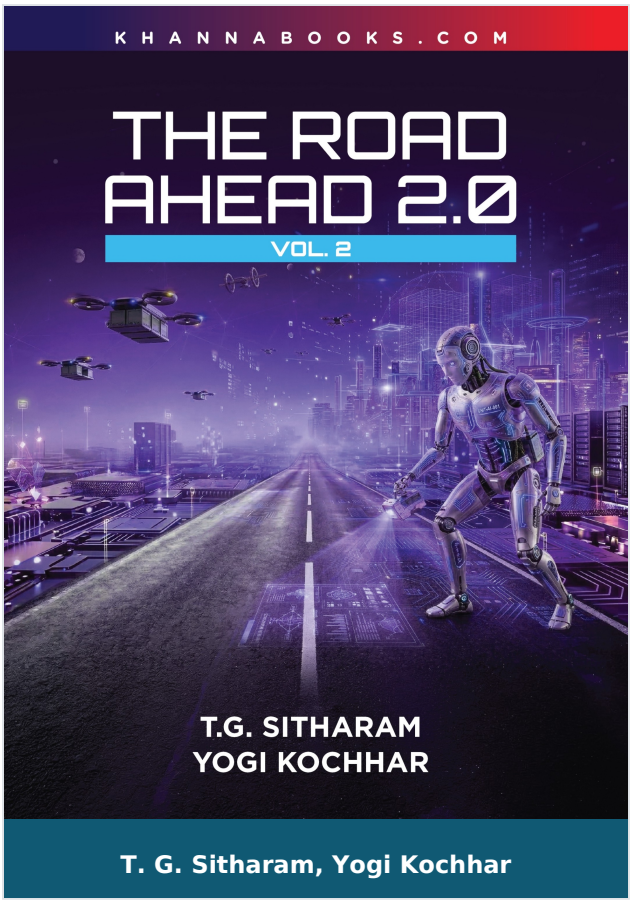
P. V. Sathish Jackson

P. V. Sathish Jackson Associate Professor, Dept of CSE, Sathyabama Institute of Science and Technology

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Email: contact@khannabooks.com | Tel: 011-2324 44 47 - 48 | Mobile: +91-99109 09320



The Road Ahead 2.0 Volume-2 (Colour Edition)

Author :	T. G. Sitharam, Yogi Kochhar
ISBN 13 :	978-93-74548-61-5
ISBN 10 :	9374548615
E-ISBN 13 :	978-93-74548-61-5
Edition :	First
Pages :	276
Type of book :	Physical
Year :	2026
Language :	English
Publisher :	Khanna Publishing House
M.R.P :	Rs 995.00
Categories :	Computer Science Engineering, New Arrivals, Emerging Technologies, Book Store
Condition Type :	New
Country Origin :	India

Khanna Publishing House

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Email: contact@khannabooks.com | Tel: 011-2324 44 47 - 48 | Mobile: +91-99109 09320

Product Description

Do we own the table or the Casino?

Welcome to this Kumbh of AI.

We need to open our eyes to the issue of Data integrity and sovereignty.

In the AI-driven world, data is the new currency, yet we've handed ours over voluntarily. From Aadhaar-linked social media to our apps and emails and websites that are building trillion-dollar valuations for global companies that pay no taxes here. Data is sold in GBs. It is a commodity. Should all commodities not be taxed as they are produced or consumed. AI's raw stock is data from a billion-1 population in India.

Desmond Tutu's: When missionaries came to Africa, they had the Bible, and we had the land. They said, lets pray. We closed our eyes to pray; when we opened them, we had their Bible, they had our lands.

India's demographic dividends that must accrue here by way of mindshare in Yottabytes of data sits untaxed abroad. Why aren't we reclaiming value? OpenAI's profit motive, backed by Microsoft's $80 bn investment in one year alone highlights their grip on singularity and humanity. It is the equivalent of 160 times of our spend on the Kumbh or more than the GDP of over 100 countries.

Server farms in data centers are like vast fields tended by farmers that cultivate data, shaping human decisions and perceptions like crops. Over time, the farmers, dictate the harvest, silently steering humanity's actions and future with automated precision. We must brace for that impact as we become puppets and bionic at their hands.

If we don't control our data, we'll remain tokens on the casino table, not players owning the house. Lets honor Aryabhatta and Brahmagupta by mastering the checksum.

Its time to own the Casino and not be played by it!

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“This book is a NORTH STAR of AI. Nota mere must read to re-imagine but a recipe for a catalytic change.”— *Dr. S. Somnath, Chairman ISRO*

“‘The Road Ahead 2.0 brilliantly unpacks the seismic potential of AI & DeFi, crypto to reshape sovereign finance.’”— *Dewang Neralla, Co founder MCX, founder HiwiPay*

“‘This book is like James Bond with a Martini; shaken; not just stirred’”— *Raghavendra Rathore, Global Fashion Icon*

“‘From wool gathering AI on the mountainside, Prof Sitharam and Yogi, you put it like ducks in a row! Seminal... Fascinating’”— *Jasleen Ahluwalia, Blockchain leader, US*

“‘Avista into how the world must repurpose its optics’”— *Dilip Thakore, EducationWorld*

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- Social Media, Deep Fakes, Journalism & IPR
- Life Style
- The Stories

Author

T. G. Sitharam

T. G. Sitharam is a civil engineer, professor at IISc Bangalore, former director at IIT Guwahati. Currently, he is serving as Chairman of the All India Council for Technical Education, (AICTE) from 1 December 2002 onwards. He is known for his works in the fields of rock mechanics, rock engineering geotechnical earthquake engineering. He is an elected fellow of Indian Geotechnical Society, Institution of Engineers (India) and American Society of Civil Engineers.

Yogi Kochhar

Yogi Kochhar : - Yogi, an AI FUTURIST, works across sectors in US, UK and India to operationalize AI adoption at scale: his ability to simplify complex ideas and translate them into implementable constructs gives this book its unique clarity and force. Author, Poet Golfer, Trekker. Their collaboration results in a seminal work that charts not just what AI can do, but what it must do; strengthen institutions, empower citizens, and

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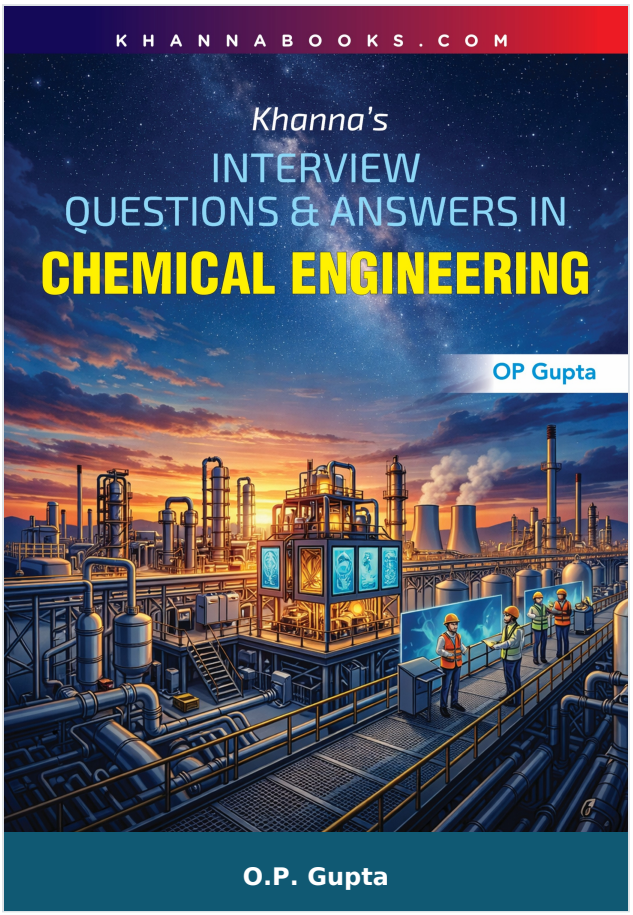
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prepare societies for an era of profound transformation.

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Khanna's Interview Questions & Answers in Chemical Engineering

Author :	O.P. Gupta
ISBN 13 :	978-93-77082-49-9
ISBN 10 :	9377082498
E-ISBN 13 :	978-93-77082-49-9
Edition :	First
Pages :	240
Type of book :	Physical
Year :	2026
Language :	English
Publisher :	Khanna Publishing House
M.R.P :	Rs 498.00
Categories :	Chemical Engineering, Objective Type Books, New Arrivals, Book Store
Condition Type :	New
Country Origin :	India

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4C/4344, Ansari Road, Daryaganj, New Delhi-110002
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Product Description

Interview Questions and Answers in Chemical Engineering by O.P. Gupta is a comprehensive, meticulously structured resource designed to bridge the gap between academic learning and professional recruitment. This first-edition volume provides a deep dive into the core pillars of the field, covering essential topics such as Fluid Mechanics, Heat Transfer, Mass Transfer, and Instrumentation. By presenting technical concepts in a clear question-and-answer format, the book helps readers master complex theories while simultaneously preparing them for the practical rigors of the industry.

The book is tailored for a wide-ranging audience, including diploma, degree (B. Tech.), and postgraduate (M. Tech.) students, as well as PhD candidates defending their theses. It also serves as an indispensable guide for professionals preparing for associate membership examinations like AMIE and AMIIChE, and for those appearing for recruitment interviews at premier public and private sector organizations like BARC, SAIL, and IOC. With its focus on both foundational principles and real-world applications—ranging from valve operations to advanced membrane separations—this book acts as a vital tool for anyone looking to excel in the chemical engineering profession.

Salient Features

• Core Technical Mastery: Comprehensive coverage of fundamental subjects like fluid mechanics, heat transfer, and thermodynamics.

• Interview-Ready Format: Concepts presented in a concise question-and-answer style, ideal for viva-voce and recruitment preparation.

• Industrial Equipment Insights: Functional details on hardware like orifice meters, venturi scrubbers, and various heat exchangers.

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• Advanced Separation Processes: In-depth explanations of liquid-liquid extraction, crystallization, and membrane-based techniques.

• Practical Applications: Strong focus on real-world scenarios, including wastewater treatment and industrial process control.

• Safety & Instrumentation: Critical guidance on PID controllers and specialized gauges for operational safety.

• Competitive Exam Alignment: Content tailored to the requirements of GATE, AMIE, and PSU recruitment exams.

• Diverse Domain Scope: Covers emerging and miscellaneous topics like carbon sequestration and environmental engineering.

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- Distillation Column
- MISCELLANEOUS QUESTIONS

Author

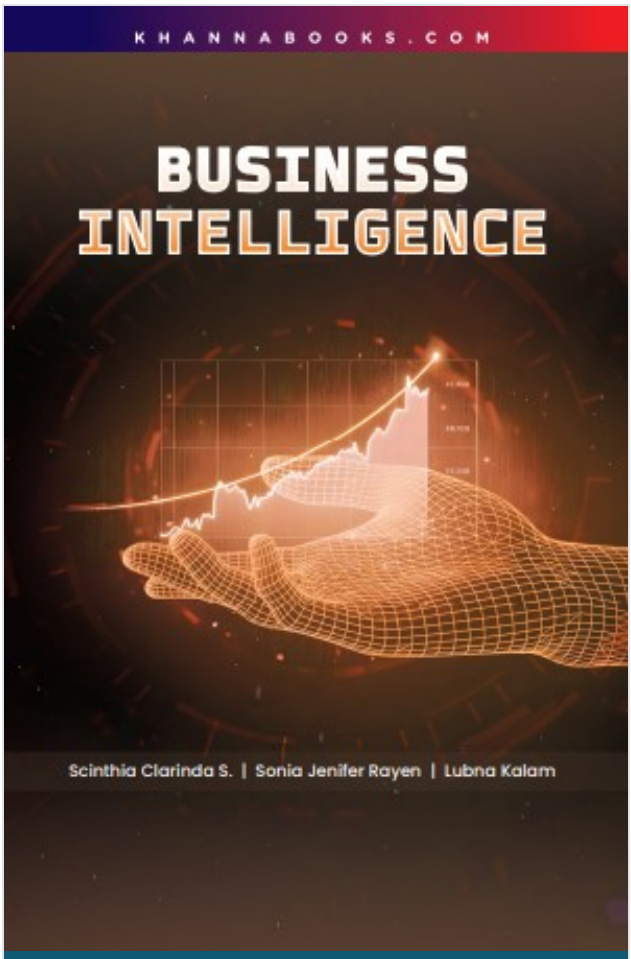
O.P. Gupta

O.P. Gupta Om Prakash Gupta is basically being a chemical engineer, he has a practising experience of efficient Ennergy management and HR functions in steel Industry for more than three decades. privileged to be the youngest writer of technical books in the country (for he had written his first book at the age of 24 years while doing M. Tech. at I.I.T kanpur in 1979), he has authored many frontline books for engineering students. besides, being the regular faculty member in technical courses for Management Trainees (Technical), he has also visited england and france on a study tour sponsored by United Nations Development Programme (UNDP) to study the scope of energy conservation in steel plants in 1987.

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Scinthia Clarinda S., Sonia Jenifer Rayen, Lubna Kalam

Business Intelligence

Author :	Scinthia Clarinda S., Sonia Jenifer Rayen, Lubna Kalam
ISBN 13 :	978-93-55386-42-7
ISBN 10 :	9355386427
E-ISBN 13 :	978-93-55386-42-7
Edition :	First
Pages :	76
Type of book :	Physical
Year :	2025
Language :	English
Publisher :	Khanna Publishing House
M.R.P :	Rs 148.00
Categories :	New Arrivals, Book Store, Sathyabama Series
Condition Type :	New
Country Origin :	India

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Product Description

Business Intelligence

This book, BUSINESS INTELLIGENCE, stands as an essential and comprehensive resource for professionals and students seeking to master the principles of data-driven decision-making. The core theme is the systematic use of technology, processes, and tools to convert an organization's raw data assets into actionable insights that drive improved operational performance and strategic foresight. It offers a rigorous, yet accessible, exploration of key BI concepts, covering the distinction between Data, Information, and Intelligence and the fundamental components of BI Architecture, including Data Warehousing, OLAP, and the crucial ETL process.

The practical value of this text is demonstrated through its detailed coverage of the BI Life Cycle, the implementation challenges organizations face, and the necessity of developing a strategic BI Roadmap. It uniquely integrates advanced topics like predictive analytics and the role of organizational culture in BI success. Designed for learners, practitioners, and researchers—from casual business users to professional data analysts—this book is an indispensable asset for anyone committed to leveraging data for business growth and a competitive advantage.

Salient Features:

- **BI Architectural Core**: Details the components of BI architecture like Data Warehousing and OLAP (Online Analytical Processing), showing how they enable rapid, multidimensional data analysis.
- **ETL Process Mastery**: Provides a deep dive into the Extract, Transform, Load (ETL) mechanism, detailing critical steps like data cleaning, filtering, and standardization necessary for building a robust Data Warehouse.

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- **Strategic Planning**: Explores the importance of developing a comprehensive BI Strategy and Roadmap, outlining essential steps for implementation, risk assessment, and achieving a clear Return on Investment (ROI).
- **User-Centric Design**: Focuses on end-user segmentation and the creation of user-friendly dashboards and scorecards. This ensures that complex data is accessible for informed decision-making.
- **Emerging Technology**: Covers the future of Business Intelligence, including the integration of AI/Machine Learning for automated analysis, cloud-based analytics, and real-time data processing.
- **MSBI Toolset**: Offers practical insights into the Microsoft Business Intelligence (MSBI) suite, specifically detailing tools like SSIS (ETL), SSAS (OLAP/Data Mining), and SSRS (Reporting).
- **Predictive Analytics**: Explores advanced analytical techniques like Data Mining and Statistical Analysis to uncover hidden patterns and develop predictive models for future business forecasting.
- **Implementation Challenges**: Discusses critical issues and challenges that organizations face, such as data quality issues, implementation complexity, and the Total Cost of Ownership (TCO).

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- Business Intelligence User Model
- Business Intelligence Issues and Challenges
- Business Intelligence Strategy and Roadmap

Author

Scinthia Clarinda S.

Scinthia Clarinda S., Associate Professor, Dept of CSE, Sathyabhama Institute of Science and Technology Sonia Jenifer Rayen, Associate Professor, Dept of CSE, Sathyabhama Institute of Science and Technology Lubna Kalam, Associate Professor, Dept of CSE, Sathyabhama Institute of Science and Technology

Sonia Jenifer Rayen

Sonia Jenifer Rayen, Associate Professor, Dept of CSE, Sathyabhama Institute of Science and Technology

Lubna Kalam

Lubna Kalam, Associate Professor, Dept of CSE, Sathyabhama Institute of Science and Technology

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Smarter City

Author :	Bala Sai Gayathri, G. Anbu Selvi, R. Nivedha
ISBN 13 :	978-93-55385-23-9
ISBN 10 :	9355385234
E-ISBN 13 :	978-93-55385-23-9
Edition :	First
Pages :	72
Type of book :	Physical
Year :	2025
Language :	English
Publisher :	Khanna Publishing House
M.R.P :	Rs 148.00
Categories :	New Arrivals, Book Store, Sathyabama Series
Condition Type :	New
Country Origin :	India

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Product Description

Smarter City

The concept of the Smarter City represents the future of urban living—a paradigm where technology, data, and interconnected infrastructure converge to enhance sustainability, efficiency, and the quality of life for citizens.

Smarter City provides an essential roadmap for understanding this complex evolution. It begins by laying the foundational pillars, exploring the convergence of IoT (Internet of Things), Cloud Computing, and Big Data as the technological engine of urban transformation. The book moves beyond theory to detail practical, real-world use cases, such as Connected Street Lighting that improves energy efficiency, Smart Traffic Control that dynamically reduces congestion, and Connected Environmental Monitoring systems that track air and water quality in real time.

This text is vital for urban planners, engineers, policymakers, and technologists seeking to grasp the architecture, implementation, and long-term impact of smart city initiatives. It is the definitive guide to building a truly intelligent, resilient, and sustainable urban future.

Salient Features:

- **Foundational Technology**: Deep dive into the core technologies enabling smart cities: IoT (Internet of Things), Cloud Computing, and Big Data Analytics.
- **Key Pillars of Smart Cities**: Comprehensive coverage of the main components, including Smart Governance, Smart Economy, Smart Mobility, Smart Environment, Smart People, and Smart Living.
- **IoT Architecture and Sensors**: Detailed explanation of the IoT architectural layers (Perception, Network, Application) and the role of various sensors (temperature,

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humidity, air quality) in data collection.

- **Practical Use Cases**: Real-world examples of successful smart city deployment, including:

1. Connected Street Lighting for energy saving and remote monitoring.
2. Smart Traffic Control for dynamic signal adjustment and congestion reduction.
3. Connected Environmental Monitoring for air quality tracking and pollution detection.

- **Cloud and Data Integration**: Analysis of how Cloud Platforms provide the necessary infrastructure for scalable data storage and how Big Data Analytics translates raw sensor data into actionable insights for city management.
- **Citizen-Centric Design**: Emphasis on how smart city initiatives directly benefit citizens by enhancing public safety, reducing commute times, and improving environmental sustainability.

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- Smarter City Management and Smarter Human Services
- Smarter City and IoT

Author

Bala Sai Gayathri

Bala Sai Gayathri Associate Professor, Dept of CSE, Sathyabhama Institute of Science and Technology

G. Anbu Selvi

G. Anbu Selvi Associate Professor, Dept of CSE, Sathyabhama Institute of Science and Technology R.Nivedha Associate Professor, Dept of CSE, Sathyabhama Institute of Science and Technology

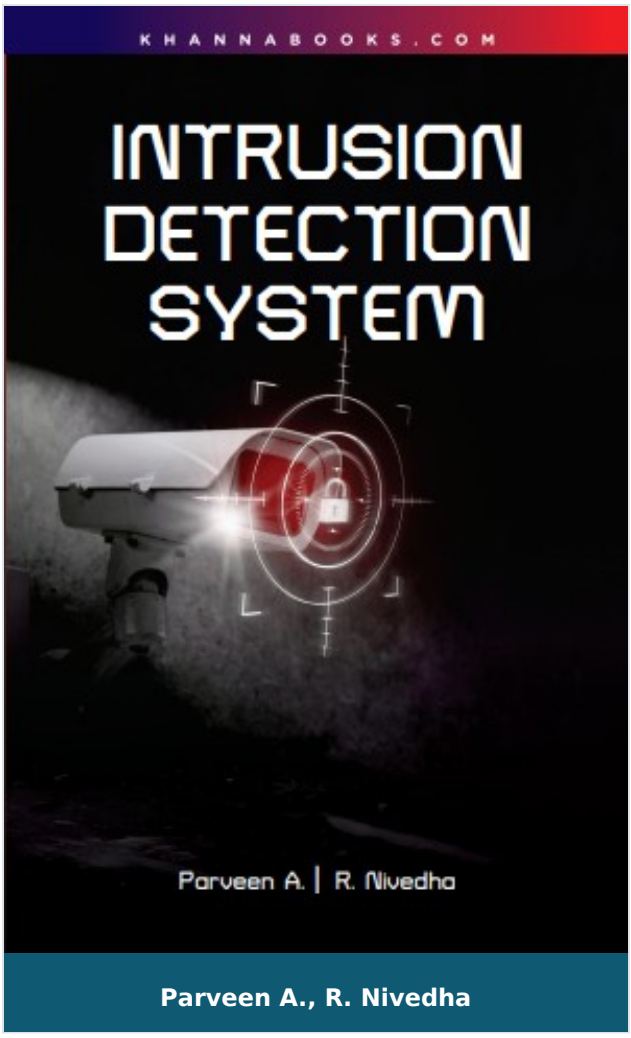
R. Nivedha

R. Nivedha, Associate Professor, Dept of CSE, Sathyabhama Institute of Science and Technology

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Parveen A., R. Nivedha

Intrusion Detection Systems

Author :	Parveen A., R. Nivedha
ISBN 13 :	978-93-55382-47-4
ISBN 10 :	9355382472
E-ISBN 13 :	978-93-55382-47-4
Edition :	First
Pages :	100
Type of book :	Physical
Year :	2025
Language :	English
Publisher :	Khanna Publishing House
M.R.P :	Rs 148.00
Categories :	New Arrivals, Book Store, Sathyabama Series
Condition Type :	New
Country Origin :	India

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Product Description

Intrusion Detection Systems

"INTRUSION DETECTION SYSTEMS" offers a comprehensive and vital resource for navigating the rapidly evolving domain of cybersecurity. Written in an academic yet accessible tone, this book provides a thorough introduction to Intrusion Detection Systems (IDS), exploring their historical evolution, foundational concepts, and critical role in protecting modern digital environments. The core purpose of this text is to bridge the gap between theoretical knowledge and real-world application, equipping readers with the expertise to implement robust security strategies against increasingly sophisticated threats.

The book highlights the transformative impact of Machine Learning (ML) and Artificial Intelligence (AI) on IDS, detailing deep learning approaches, ML models for anomaly detection, and feature engineering techniques. It goes beyond traditional methods to address the unique challenges of securing emerging technologies such as the Internet of Things (IoT), cloud-based networks, and blockchain. Furthermore, it delves into advanced techniques like fuzzy logic, genetic algorithms, hybrid models, and real-time IDS using big data analytics.

This indispensable guide is meticulously structured with five units and includes detailed case studies, making it an essential text for its target audience: students seeking foundational knowledge, professionals looking to upgrade their deployment strategies, and researchers exploring open challenges like adversarial ML attacks and autonomous IDS development. It serves as a definitive roadmap for enhancing network resilience against the ever-changing cyber threat landscape.

Salient Features:

- **Core IDS Fundamentals**: Explore the history, evolution, and foundational principles of IDS. Compare signature-based, anomaly-based, and hybrid models, and understand key evaluation metrics like TPR and FPR.
- **AI-Driven Detection**: Master the use of Machine Learning and Deep Learning, including CNNs and LSTMs, to enhance anomaly detection capabilities and prepare large-scale datasets for modern IDS.
- **Securing New Frontiers:** Learn to design and implement specialized IDS for emerging technologies like IoT, cloud computing, and blockchain. Focus on lightweight solutions for resource-constrained mobile and edge environments.
- **Advanced Threat Mitigation**: Investigate cutting-edge techniques such as fuzzy logic and genetic algorithms in IDS. Understand hybrid models, distributed architectures, and real-time big data analytics for large-scale networks.
- **Future Resilience & Research**: Analyze emerging threats and explore future trends like autonomous and self-healing IDS. Study the defense against adversarial ML attacks and the strategic integration with SIEM systems.
- **Real-World Application**: Apply theoretical knowledge through five detailed case studies, including enterprise deployment, advanced financial institution solutions, and securing smart city infrastructure.
- **Defense Architecture**: Clearly differentiate between the passive monitoring role of Intrusion Detection Systems (IDS) and the proactive blocking function of Intrusion Prevention Systems (IPS) in modern security.

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- IDS for Emerging Technologies
- Advanced Techniques and Hybrid Models
- Future Trends and Research Challenges

Author

Parveen A.

Parveen A. , Associate Professor, Dept of CSE, Sathyabhama Institute of Science and Technology R. Nivedha, Associate Professor, Dept of CSE, Sathyabhama Institute of Science and Technology

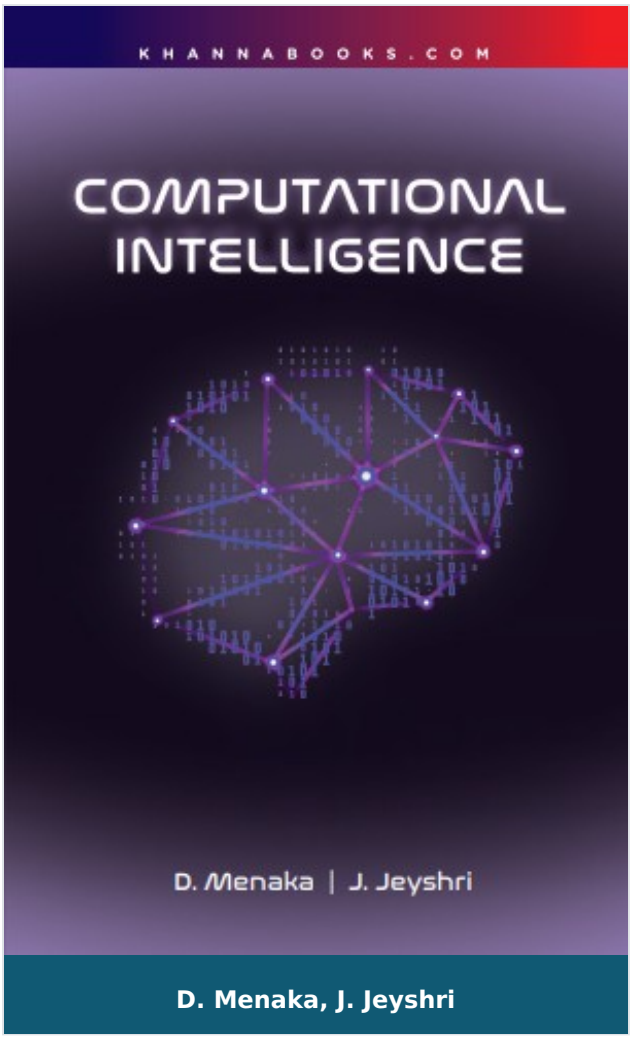
R. Nivedha

R. Nivedha, Associate Professor, Dept of CSE, Sathyabhama Institute of Science and Technology

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D. Menaka, J. Jeyshri

Computational Intelligence

Author :	D. Menaka, J. Jeyshri
ISBN 13 :	978-93-55382-76-4
ISBN 10 :	9355382766
E-ISBN 13 :	978-93-55382-76-4
Edition :	First
Pages :	76
Type of book :	Physical
Year :	2025
Language :	English
Publisher :	Khanna Publishing House
M.R.P :	Rs 148.00
Categories :	New Arrivals, Book Store, Sathyabama Series
Condition Type :	New
Country Origin :	India

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4C/4344, Ansari Road, Daryaganj, New Delhi-110002

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Product Description

Computational Intelligence

Computational Intelligence serves as a comprehensive and insightful guide into a field that stands at the forefront of the rapidly evolving digital era, powering advancements from data analytics to autonomous systems. This book is dedicated to providing a structured yet accessible overview of Computational Intelligence (CI), a powerful paradigm that solves complex real-world problems by leveraging techniques inspired by natural intelligence. The core theme is the integration of diverse concepts, including artificial intelligence, machine learning, neural networks, evolutionary computing, and fuzzy logic.

The text offers a careful balance between theoretical depth and practical relevance, ensuring that complex methodologies are made clear and engaging for a wide audience, which includes students, educators, researchers, and professionals. Chapters cover fundamental principles, key algorithms, and recent advancements, empowering readers to not only understand but also implement intelligent computational models. To foster practical knowledge, the book integrates real-world case studies and examples that demonstrate the application of CI techniques across crucial domains such as healthcare, finance, robotics, and optimization. By focusing on algorithmic design and real-time applications, this academically rigorous work inspires innovation and provides the tools necessary to contribute effectively to the future of intelligent computing.

Salient Features:

- **Foundational AI Concepts**: Covers the principles of Artificial Intelligence, including its foundations, different types of AI, and the architecture and operation of various intelligent agents.

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- **Neural Networks & Deep Learning**: Details the structure of Artificial Neural Networks (ANNs), Single/Multi-Layer Perceptrons, and modern Deep Learning algorithms, covering both supervised and unsupervised learning.
- **Fuzzy Logic & Hybrid Systems**: Explores Fuzzy Logic, Fuzzy Set Theory, and Fuzzy Reasoning, culminating in advanced hybrid models like Neuro-Fuzzy and Cooperative Fuzzy Neural Networks (CFNN).
- **Evolutionary Algorithms**: Provides an introduction to Genetic Algorithms, detailing concepts like search space, reproduction, and selection methods essential for optimization problems.
- **Swarm Intelligence Techniques**: Dedicated coverage of optimization algorithms inspired by collective behavior, including Particle Swarm Optimization (PSO) and Ant Colony Optimization (ACO) variants.
- **Practical Search Strategies**: Explains key Problem-Solving Agents and algorithms, differentiating between Uninformed and Informed search strategies used for efficient goal-directed problem-solving.
- **Real-World Case Studies**: Integrates practical applications and case studies across vital sectors like healthcare, finance, robotics, and logistics, demonstrating the implementation of CI techniques.
- **Ethical & Future Trends**: Discusses the ethical considerations and challenges of AI, alongside future trends like Explainable AI (XAI) and Quantum AI, preparing readers for responsible deployment.

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Author

D. Menaka

D. Menaka, Associate Professor, Dept of CSE, Sathyabhama Institute of Science and Technology

J. Jeyshri

J. Jeyshri Associate Professor, Dept of CSE, Sathyabhama Institute of Science and Technology

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