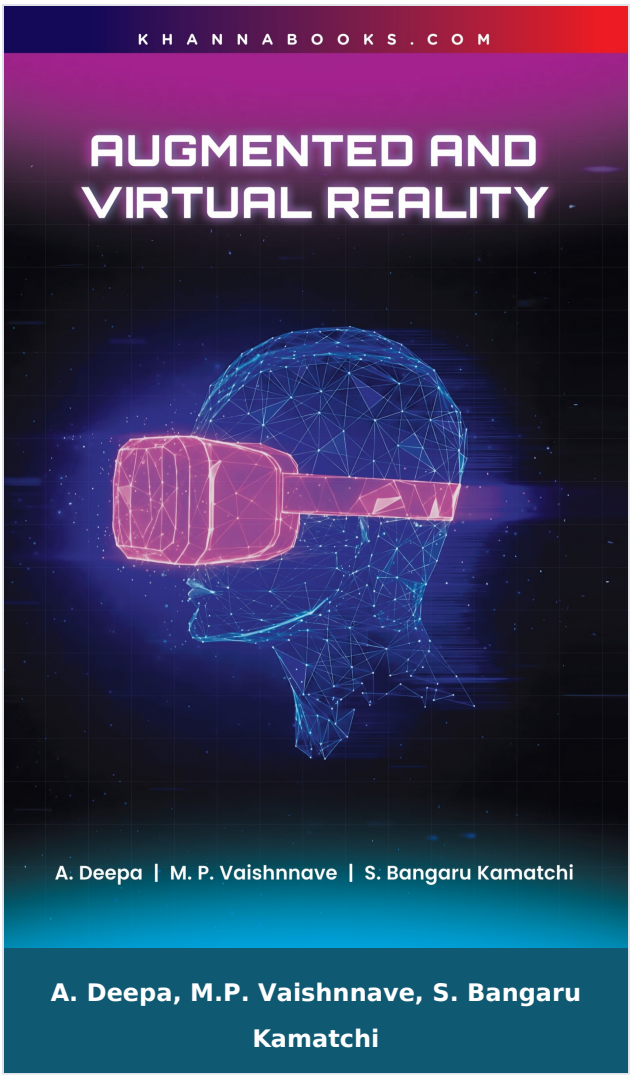

Augmented and Virtual Reality

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

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

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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- Interaction for AR/VR Environments Design
- Introduction to Unity
- Introduction to Vuforia and Physics in Unity
- 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

S. Bangaru Kamatchi

S. Bangaru Kamatchi

Khanna Publishing House

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

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A. Deepa, M.P. Vaishnnave, S. Bangaru Kamatchi

Artificial Intelligence

Author :	A. Deepa, M.P. Vaishnnave, S. Bangaru Kamatchi
ISBN 13 :	978-93-55382-36-8
ISBN 10 :	9355382367
E-ISBN 13 :	978-93-55382-36-8
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, Book Store, Sathyabama Series
Condition Type :	New
Country Origin :	India

Product Description

Artificial Intelligence serves as a comprehensive and structured guide to the fundamental principles, techniques, and transformative real-world applications of AI. Recognizing AI as one of the 21st century's most essential technologies, this book is an invaluable resource for mastering the concepts required to understand and develop intelligent systems. It is meticulously designed to guide readers from foundational concepts, such as the history of AI and the nature of intelligent agents, through increasingly sophisticated methodologies.

The core themes delve into problem-solving paradigms, including uninformed and informed search strategies like A* search, Hill Climbing, and Genetic Algorithms, alongside the critical aspects of optimal decision-making in competitive environments using techniques like Alpha-Beta Pruning. A significant portion is dedicated to Knowledge Representation and Reasoning, exploring formal logic (Propositional and First-Order), Ontological Engineering, and the mechanisms of logical inference like Forward and Backward Chaining. Furthermore, the text addresses acting logically in uncertain, real-world settings by utilizing Bayesian networks and decision theory to ensure rational planning.

By integrating theoretical foundations with practical implementation examples, this book is an essential resource for students, educators, researchers, and professionals seeking to bridge the gap between academic knowledge and the creation of intelligent systems capable of solving complex, real-world challenges.

Salient Features

• Search & Problem Solving: Details a full spectrum of search algorithms, including uninformed (BFS, DFS) and advanced heuristic strategies like A* search, Hill Climbing, and Simulated Annealing.

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• Game Theory Insights: Covers optimal decision-making strategies in adversarial environments, featuring comprehensive coverage of Minimax search and efficiency enhancement via Alpha-Beta Pruning.

• Logical Reasoning: Presents a deep dive into Knowledge Representation using First-Order Logic, Situation Calculus, and practical inference mechanisms like Forward and Backward Chaining.

• Uncertainty Handling: Explains Probabilistic Reasoning and Decision-Making in non-deterministic environments, focusing on the application of Bayes's rules and the semantics of Belief Networks.

• Planning Methodologies: Explores agent planning techniques from state-space search to Partial Order Planning (POP), offering methods for both theoretical plan representation and real-world action execution.

• Practical Learning:Promotes a holistic learning experience by blending theoretical depth with practical implementation through problem-solving exercises and complex real-world examples in each unit.

• AI Applications: Dedicates an entire unit to transformative applications like Natural Language Processing (NLP), Machine Translation, Information Retrieval, and core Robotics concepts.

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Table Of Contents

- Introduction and Problems Solving
- Informed Search and Game Playing
- Knowledge and Reasoning
- Acting Logically
- AI Applications

Author

A. Deepa

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

M.P. Vaishnnave

M.P. Vaishnnave

S. Bangaru Kamatchi

S. Bangaru Kamatchi

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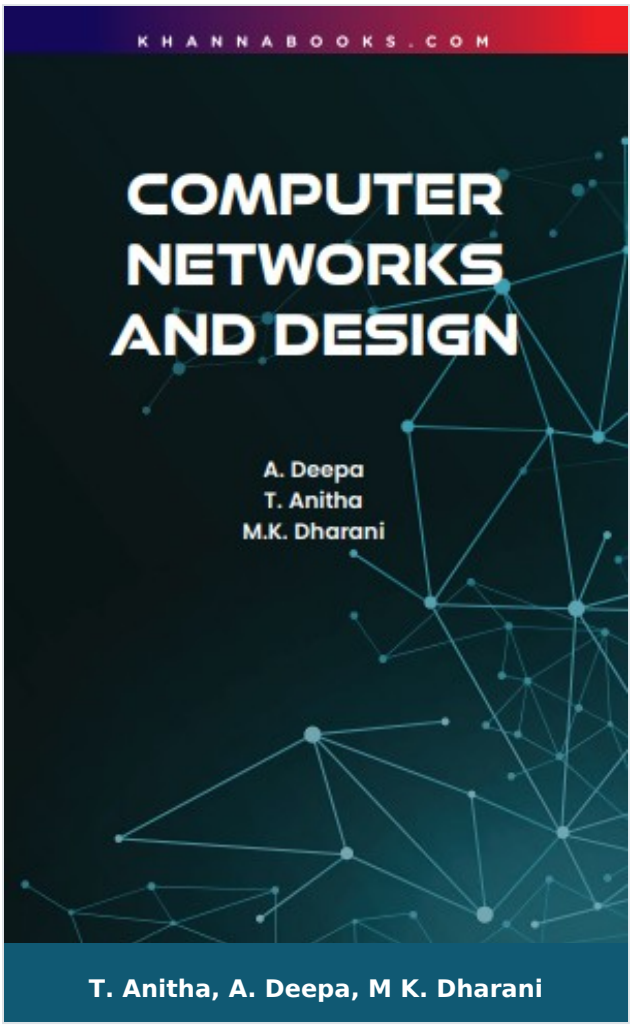

T. Anitha, A. Deepa, M K. Dharani

Computer Networks and Design

Author :	T. Anitha, A. Deepa, M K. Dharani
ISBN 13 :	978-93-55385-31-4
ISBN 10 :	9355385315
E-ISBN 13 :	978-93-55385-31-4
Edition :	First
Pages :	116
Type of book :	Physical
Year :	2026
Language :	English
Publisher :	Khanna Publishing House
M.R.P :	Rs 198.00
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

Computer Networks and Design

In the current era, where network infrastructure is the fundamental backbone of modern enterprises, this book serves as a comprehensive and practical guide to understanding the principles of effective computer network design and implementation. It addresses the ever-increasing need for well-designed, secure, and highly efficient network architectures across businesses of all sizes.

The core theme of the book is a structured, top-down approach to mastering the entire network lifecycle, moving from determining requirements and analyzing existing infrastructure to completing the final design, deployment, and long-term maintenance. It provides detailed coverage of fundamental design methodologies, including modular and hierarchical network design strategies that ensure scalability and efficiency. Beyond foundational concepts like LAN connectivity (Ethernet, Token-Ring) and the OSI model, the text delves into critical modern topics such as Virtual Private Networks (VPNs), Intranets, and Extranets for secure remote communication.

This resource is an ideal tool for a target audience including students of computer science and engineering, network professionals, and IT managers seeking to enhance their expertise in building and managing robust network infrastructures effectively. By bridging theoretical concepts with practical insights on networking tools (simulation, baselining) and evolving technologies (IP PBX, FoIP, xDSL), the book equips readers with the essential skills to design and optimize future-proof, high-performance network solutions.

Salient Features:

- **Modular Design Focus**: Details modular and hierarchical network design methodologies to improve scalability, management, and fault tolerance across complex LAN and WAN environments.

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- L**AN to Mainframe**: Covers underlying LAN concepts like Ethernet and InterLAN Switching, and provides specialized guidance on secure connectivity and integration with legacy Mainframe systems.
- **Virtual Security Architectures**: Dedicated unit on VPNs, Intranets, and Extranets, focusing on planning, management, and secure remote access implementation using technologies like IPSec VPNs.
- **Network Optimization Tools**: Introduces practical tools and techniques for network analysis, including network baselining as an effective planning tool and simulation methods for designing multimedia networks.
- **Real-time Communication**: Explores the integration of Voice over IP (VoIP) and Video over IP networks, detailing the setup of IP PBX telephony and Videoconferencing systems over IP networks.
- **Broadband Access Technologies**: Discusses emerging technologies in data communications, including the merits of xDSL technology and necessary preparations for utilizing high-speed cable modems.
- **Layered Design Analysis:** Provides a foundational review of the OSI model and various network topologies (Bus, Star, Mesh), offering a strong theoretical background for practical design decisions.

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- Underlying LAN Concepts
- VPNs, Intranets and Extranets
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- Evolving Technologies

Author

T. Anitha

T. Anitha Associate Professor, Dept of CSE, Sathyabhama Institute of Science and Technology

A. Deepa

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

M K. Dharani

M K. Dharani, Associate Professor, Dept of CSE, Sathyabhama Institute of Science and Technology

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