

UGC recommended New NEP 2020 multidiscipline syllabus & Syllabus covered under University of Calcutta, Vidyasagar University, and University of Kalyani

Al for All: TOOLS AND TECHNIQUES

Prof. (Dr.) Biswapati Jana Mr. Debkumar Bera Dr. Sharmistha Jana



AI for All : Tools and Techniques

Following UGC recommended New NEP 2020 Syllabus

Syllabus covered under University of Calcutta, Vidyasagar University (3rd Semester) and University of Kalyani

> Written by **Prof. (Dr.) Biswapati Jana** Computer Science, Vidyasagar University

> Mr. Debkumar Bera Computer Science, Vidyasagar University

Dr. Sharmistha Jana Midnapore College [Autonomous]



First Published on 16th January, 2024 by **Amitrakshar**TM **Publishers** Kolkata - 700068 © Copyright reserved by Author ISBN: 978-93-6008-975-7 (Hardback) Price: 300.00 Title of the Book: AI for All : Tools and Techniques Authors: Prof. (Dr.) Biswapati Jana | Mr. Debkumar Bera | Dr. Sharmistha Jana Language: English Publisher and Type setter: Amitrakshar Publishers Typeset in Times New Roman Page No.: 169 Printed by: Amitrakshar Publishers & M. Enterprises Website: www.amitrakshar.co.in Website link: https://www.amitrakshar.co.in/book/ Email id: amitraksharpublishers@gmail.com Phone/ WhatsApp Number: 9735768900 Published by:



Office: 1/199, Jodhpur Park, Gariahat Road, Kolkata- 700068

All rights reserved. No part of this book may be reprinted or reproduced or utilised in any form or by any electronic, mechanical or other means, now known or hereafter invented, including, photocopying and recording, or in any information shortage or retrieval system, without permission in writing form the publisher.

Syllabus of AI 3rd Semester, Vidyasagar University

MDC-03T:

Basics of Artificial Intelligence (AI)

Credits 03 (Full Marks-50)

Course contents:

(Total lecture: 45Hrs.)

Unit 1: Introduction to Artificial Intelligence

(5 Lectures)

- Definition and scope of Al
- Historical overview and key milestones
- Differentiating Al from human intelligence

Unit 2: AI Subfields and Technologies (15 Lectures)

- Overview of Machine learning: Traditional programming vs Machine Learning,
- Types of learning, Classification, Clustering, Learning Bias, Concept of Training & Loss function
- Overview of neural networks: MCP, Activation functions, Block diagram of CNN, Basics of Deep learning
- Overview of Natural language processing (NLP) and computer vision.

Unit 3: Applications of Al

- Al in healthcare: Diagnosis, treatment, and medical imaging
- Al in finance: Fraud detection, algorithmic trading, and risk assessment
- Al in transportation: Autonomous vehicles and traffic optimization
- Al in customer service and chatbots
- Al in education: Personalized learning tools and intelligent tutoring systems
- Al in research: Tools and Techniques

Unit 4: Ethical and Social Implications of AI (8 Lectures)

- Bias and fairness in Al systems
- Privacy and data protection concerns
- Impact of Al on employment and the workforce
- Al and social inequality

Unit 5: Other Important Issues

(5 Lectures)

- Ethical guidelines and responsible Al practices
- Al and Innovation
- Emerging trends and future directions in Al

AI and creativity: Generative models and artistic applications

Contents

Chapter-1:	Introduction to Artificial Intelligence	1-25
1.1.	Introduction	
1.2.	Definition and scope of AI	
1.3.	Historical overview and key milestones	
1.4.	Differentiating AI from human intelligence	
1.5.	Summery	
1.6.	MCQ	
1.7.	Review questions	
1.8.	Abbreviation	
Chapter- 2	: AI Subfields and Technologies	26-61
2.1.	Overview of Neural Networks	
2.2.	Types of learning	
2.3.	Overview of Machine learning	
2.4.	Overview of Natural language processing (NLF)
	And Computer Vision	
2.5.	Summery	
2.6.	MCQ	
2.7.	Review questions	
2.8.	Abbreviation	
Chapter- 3	: Applications of AI	62-114
3.1.	Introduction: The AI Revolution—	
	Transforming Our World	
3.2.	AI in Healthcare: A New Era of Diagnosis,	
	Treatment, and Medical Imaging	
3.3.	AI in Finance: Transforming Fraud Detection,	
	Algorithmic Trading, and Risk Assessment	
3.4.	AI in Transportation: The Road to Smarter,	
	Safer, and Greener Mobility	
3.5.	AI in customer service and chatbots	
3.6.	AI in Education: Revolutionizing Learning with	1
	Personalized Tools and Intelligent Tutoring System	ns

- 3.7. AI in research: Tools and Techniques
- 3.8. Summery
- 3.9. MCQ
- 3.10. Review questions
- 3.11. Abbreviation

Chapter-4: Ethical and Social Implications of AI 115-148

- 4.1. Introduction
- 4.2. Bias and fairness in AI systems
- 4.3. Privacy and data protection
- 4.4. Impact of AI on employment and the workforce
- 4.5. AI and social inequality
- 4.6. Summery
- 4.7. MCQ
- 4.8. Review questions
- 4.9. Abbreviation

Chapter-5: Other Important Issues

- 5.1. Introduction
- 5.2. Ethical guidelines and responsible AI practices

149-163

- 5.3. AI and Innovation
- 5.4. Emerging trends and future directions in AI
- 5.5. AI and creativity: Generative models and Artistic applications
- 5.6. Summery
- 5.7. MCQ
- 5.8. Review questions
- 5.9. Abbreviation

ABOUT THE AUTHORS



Prof. (Dr.) Biswapati Jana, Ph.D. Professor and Head of the Department of Computer Science at Vidyasagar University with 20 years of teaching experience.



Mr. Debkumar Bera, M. Sc., M.Phil.

Assistant Professor in the Department of Computer Science at Vidyasagar University with 06 years of teaching experience.

Dr. Sharmistha Jana, Ph.D. 16 years of experience as a teacher

in the Department of Computer Science at Midnapore College (Autonomous)





website.: www.amitrakshar.co.in Email.: amitraksharpublishers@gmail.com Office: 1/199, Jodhpur Park, Gariahat Road, Kolkata - 700068 Phone :. 9735768900



website.: www.amitrakshar.co.in Price: ₹ 300.00

ISBN: 978-93-6008-975-7 9 789360 089757 (Paperback/ Softback)



