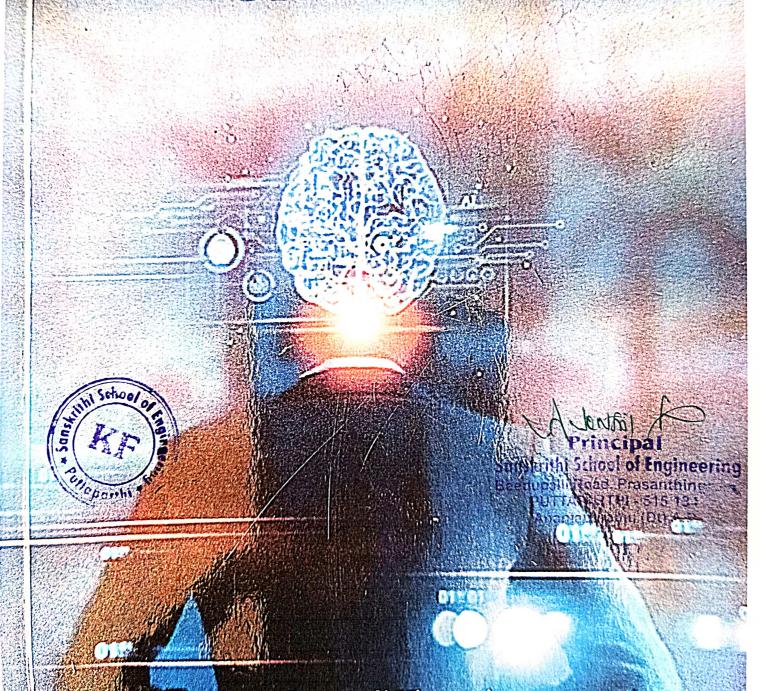


ARTHICIAL INTELLIGENCE FOR HIUMVANS



Prof. Deepali Virmani Dr. Shaifali Garg Dr. Muddada Murali Krishna Dr. B. Gayathri

Artificial Intelligence For Humans

Prof. Deepali Virmani

Dr. Shaifali Garg

Dr. Muddada Murali Krishna

Dr. B. Gayathri



Principal
Sanskrithi School of Engineering
Beedupalli Road, Prasanthur Jam)
PUTTAPARTHI - 515 134.
Anantapuramu (Ot) A.P.



BOOK RIVERS

Published By: Book Rivers

Website: www.bookrivers.com

Email: publish@bookrivers.com

Mobile: +91-9695375469

Place: Lucknow

First Edition: 2022

MRP: 410

ISBN: 978-93-5515-414-9

Copyright©: Authors

All Rights Reserved

Principal
Sanskrithi School of Engineering
Beedupalli Road, Prasanthingram,
PUTTAPARTHI - 515 134.
Anantapuramu (Dt) A.P.

No part of this publication may be reproduced, transmitted or stored in a retrieval system, in any form or by any means, electronic, mechanical, photocopying recording or otherwise, without the prior permission of the author.

[Printed In India]

Title	P.g. No
Chapter 1. Introduction to Al	1
Relationship to Human Brains	1
Modeling Problems io Al Domain	4
Data classification	6
Regression Analysis	8
Modeling Input and Output	10
Understanding Training in AI	13
Batch and Online Training	14
Supervised and Unsupervised Training	15
Chapter Summary for AI	16
Chapter 2. Normalization and Denormalization	19
Level of Measurement in Machine Learning Domain	20
Normalizing Observations	23
Normalizing Nominal Observations	24
Normalizing Ordinal Observations	25
Reciprocal Normalization	27
Denormalizing Observations	29
Denormalizing Nominal Observations	30
Denormalizing Ordinal Observations	31
Reciprocal Denormalization	33
Chapter 3. Distance Metrics	36
Understanding Vectors	36
Euclidean Distance	40
Chebysbergottatange	JONE 143

Principal
Sanskrithi School of Engineering
Beedupalli Road, Prasanthingram,
PUTTAPARTHI - 515 134.
Anantapuramu (Ut) A.P.

Optical Character Recognition		
Chapter 4. Random Number Generation		46
PRNG Concept		51
Random Distribution Type		51
Roulette Wheel		54
PRNG Algorithm		57
		59
Linear Congruential Generator		61
Multiply and Carry		63
Mersenne Twister		66
Box Muller Transformation		68
Chapter 5. K-means Clustering		71
Understanding Training sets for K-means	•	71
Unsupervised Training for K-means		73
Supervised Training for K-means		76
Understanding the K-means Algorithms	7	78
Assignment Step in K-means	8	31
Update Step in K-means		33
Initializing the K-means Algorithm	8	36
Random K-means Initialization		38
Forgy K-means Initialization)[
Chapter 6. Error Calculation		
Sum of Square root Errors		4
Root Means Square Error	9.	
mean Square Error mparison of Error Calculation	90	^
omparison of Error Calculating Methods	A VINTAIN 99	1/2

Principal
Sanskrithi School of Engineering
Beedupalli Road, Prasanthingtam,
PUTTAPARTHI - 518 134
Anantapura art (20) A.P.

whi Schoo

Chapter 7. Towards Machine Learning	105
Introduction towards Machine Learning	105
Coefficient of a Polynomial in Context of Machine Lear	ning 108
Radial Basis Network	110
Radial Basis Functions	112
Radial Basis Function Networks	113
Implementing a Radial Basis Network	115
Using a Radial Basis Network	117
Introduction to Training in ML	119
Greedy Random Training	121
Chapter 8. Optimization Training	124
Introduction to Optimization Training	124
Hill Climb Training	129
Simulated Annealing	132
Simulated Annealing Applications	134
Simulated Annealing Algorithm	135
Nelder Mead in ML	135
Nelder Mead Algorithm	137
Nelder Mead Reflection	140
Nelder Mead Expansion	143
Nelder Mead Contraction	145
Chapter 9. Discrete Optimization	148
Introduction to Discrete Optimization	148
ravelling Salesman Problem	Mindels 1

Priheipal

Sanskrithi School of Engineering
Beedupalli Road, Prasanthingtam,
PUTTAPARTHI - 515 134,
Anantapuramu (Dt) A,P.

destanding the Travelling Salesman Problem

Chapter 10. Summary	166
Circular TSP in Decrete Optimization	163
Implementing the Knapsack Problem	161
Understanding the Knapsack Problem	159
The Knapsack Problem	157
Implementing the Travelling Salesman Problem	155

Garage and adjugate to a sector of the High Art seri-



Principal
Sunskrithi School of Engineering
Beedupalli Road, Prasanthingram,
PUTTAPARTHI - 515 134.
Anantapuramu (Ot) A.P.

CHAPTER-1

INTRODUCTION TO AI

Relationship to Human Brains

There is no known relationship between the brain of a platypus and a human brain. The human brain is the most complex object in the known universe. It is estimated that the brain contains 100 billion neurons, each with 10,000 to 100,000 connections. The brain is divided into two hemispheres, each with its own set of lobes. The left hemisphere is responsible for language and the right hemisphere for spatial and mathematical abilities. The brain is also incredibly adaptable. It can learn new tasks and skills quickly and can store vast amounts of information. The brain is also capable of forming memories and storing emotions.

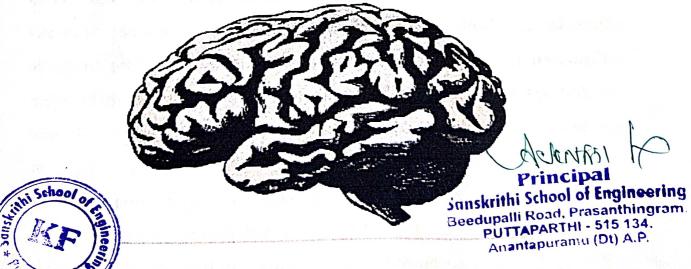


Figure 1.1 Relationships to Human Brains with AI