

Neural Networks And Deep Learning

Deep Learning and Neural Networks: Concepts, Methodologies, Tools, and Applications
Deep Learning
Deep Learning By Example
Neural Networks and Deep Learning
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Introduction to Deep Learning and Neural Networks with Python
TM Python Machine Learning
Deep Learning with PyTorch
Deep Learning with TensorFlow
Hands-On Deep Learning Architectures with Python
Deep Learning
Inside Deep Learning
Artificial Intelligence and Deep Learning
Essentials
Essentials of Deep Learning and AI
Better Deep Learning
Machine and Deep Learning
Algorithms and Applications
Deep Learning
Hands-On
Transfer Learning with Python
Trends in Deep Learning
Methodologies
Deep Learning
Management Association, Information Resources
Christopher M. Bishop
Ahmed Menshawy
Charu C. Aggarwal
Pat Nakamoto
Ahmed Fawzy Gad
Sebastian Raschka
Vishnu Subramanian
Giancarlo Zaccone
Yuxi (Hayden) Liu
Ian Goodfellow
Edward Raff
James Russell
Shashidhar Soppin
Jason Brownlee
Uday Shankar
Shanthamallu Rajiv
Chopra
Dipanjan Sarkar
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due to the growing use of web applications and communication devices the use of data has increased throughout various industries it is necessary to develop new techniques for managing data in order to ensure adequate usage deep learning a subset of artificial intelligence and machine learning has been recognized in various real world applications such as computer vision image processing and pattern recognition the deep learning approach has opened new opportunities that can make such real life applications and tasks easier and more efficient deep learning and neural networks concepts methodologies tools and applications is a vital reference source that trends in data analytics and potential technologies that will facilitate insight in various domains of science industry business and consumer applications it also explores the latest concepts algorithms and techniques of deep learning and data mining and analysis highlighting a range of topics such as natural language processing predictive analytics and deep neural networks this multi volume book is ideally designed for computer engineers software developers it professionals academicians researchers and upper level students seeking current research on the latest trends in the field of deep learning

this book offers a comprehensive introduction to the central ideas that underpin deep learning it is intended both for newcomers to machine learning and for those already experienced in the field covering key concepts relating to contemporary architectures and techniques this essential book equips readers with a robust foundation for potential future specialization the field of deep learning is undergoing rapid evolution and therefore this book focusses on ideas that are likely to endure the test of time the book is organized into numerous bite sized chapters each exploring a distinct topic and the narrative follows a linear progression with each chapter building upon content from its predecessors this structure is well suited to teaching a two semester undergraduate or postgraduate machine learning course while remaining equally relevant to those engaged in active research or in self study a full understanding of machine learning requires some mathematical background and so the book includes a self contained introduction to probability theory however the focus of the book is on conveying a clear understanding of ideas with emphasis on the real world practical value of techniques rather than on abstract theory complex concepts are therefore presented from multiple complementary perspectives including textual descriptions diagrams mathematical formulae and pseudo code chris bishop is a technical fellow at microsoft and is the director of microsoft research ai4science he is a fellow of darwin college cambridge a fellow of the royal academy of engineering and a fellow of the royal society hugh bishop is an applied scientist at wayve a deep learning autonomous driving company in london where he

designs and trains deep neural networks he completed his mphil in machine learning and machine intelligence at cambridge university chris bishop wrote a terrific textbook on neural networks in 1995 and has a deep knowledge of the field and its core ideas his many years of experience in explaining neural networks have made him extremely skillful at presenting complicated ideas in the simplest possible way and it is a delight to see these skills applied to the revolutionary new developments in the field geoffrey hinton with the recent explosion of deep learning and ai as a research topic and the quickly growing importance of ai applications a modern textbook on the topic was badly needed the new bishop masterfully fills the gap covering algorithms for supervised and unsupervised learning modern deep learning architecture families as well as how to apply all of this to various application areas yann lecun this excellent and very educational book will bring the reader up to date with the main concepts and advances in deep learning with a solid anchoring in probability these concepts are powering current industrial ai systems and are likely to form the basis of further advances towards artificial general intelligence yoshua bengio

grasp the fundamental concepts of deep learning using tensorflow in a hands on manner key features get a first hand experience of the deep learning concepts and techniques with this easy to follow guide train different types of neural networks using tensorflow for real world problems in language processing computer vision transfer learning and more designed for those who believe in the concept of learn by doing this book is a perfect blend of theory and code examples book description deep learning is a popular subset of machine learning and it allows you to build complex models that are faster and give more accurate predictions this book is your companion to take your first steps into the world of deep learning with hands on examples to boost your understanding of the topic this book starts with a quick overview of the essential concepts of data science and machine learning which are required to get started with deep learning it introduces you to tensorflow the most widely used machine learning library for training deep learning models you will then work on your first deep learning problem by training a deep feed forward neural network for digit classification and move on to tackle other real world problems in computer vision language processing sentiment analysis and more advanced deep learning models such as generative adversarial networks and their applications are also covered in this book by the end of this book you will have a solid understanding of all the essential concepts in deep learning with the help of the examples and code provided in this book you will be equipped to train your own deep learning models with more confidence what you will learn understand the fundamentals of deep

learning and how it is different from machine learning get familiarized with tensorflow one of the most popular libraries for advanced machine learning increase the predictive power of your model using feature engineering understand the basics of deep learning by solving a digit classification problem of mnist demonstrate face generation based on the celeba database a promising application of generative models apply deep learning to other domains like language modeling sentiment analysis and machine translation who this book is for this book targets data scientists and machine learning developers who wish to get started with deep learning if you know what deep learning is but are not quite sure of how to use it this book will help you as well an understanding of statistics and data science concepts is required some familiarity with python programming will also be beneficial

this book covers both classical and modern models in deep learning the primary focus is on the theory and algorithms of deep learning the theory and algorithms of neural networks are particularly important for understanding important concepts so that one can understand the important design concepts of neural architectures in different applications why do neural networks work when do they work better than off the shelf machine learning models when is depth useful why is training neural networks so hard what are the pitfalls the book is also rich in discussing different applications in order to give the practitioner a flavor of how neural architectures are designed for different types of problems applications associated with many different areas like recommender systems machine translation image captioning image classification reinforcement learning based gaming and text analytics are covered the chapters of this book span three categories the basics of neural networks many traditional machine learning models can be understood as special cases of neural networks an emphasis is placed in the first two chapters on understanding the relationship between traditional machine learning and neural networks support vector machines linear logistic regression singular value decomposition matrix factorization and recommender systems are shown to be special cases of neural networks these methods are studied together with recent feature engineering methods like word2vec fundamentals of neural networks a detailed discussion of training and regularization is provided in chapters 3 and 4 chapters 5 and 6 present radial basis function rbf networks and restricted boltzmann machines advanced topics in neural networks chapters 7 and 8 discuss recurrent neural networks and convolutional neural networks several advanced topics like deep reinforcement learning neural turing machines kohonen self organizing maps and generative adversarial networks are introduced in chapters 9 and 10 the book is written for graduate students researchers and practitioners numerous exercises are available

along with a solution manual to aid in classroom teaching where possible an application centric view is highlighted in order to provide an understanding of the practical uses of each class of techniques

ready to crank up a neural network to get your self driving car pick up the kids from school want to add deep learning to your linkedin profile well hold on there before you embark on your epic journey into the world of deep learning there is basic theory to march through first take a step by step journey through the basics of neural networks and deep learning made so simple that even your granny could understand it what you will gain from this book a deep understanding of how a neural network and deep learning work a basics comprehension on how to build a deep neural network from scratch who this book is for beginners who want to approach the topic but are too afraid of complex math to start what s inside a brief introduction to machine learning two main types of machine learning algorithms a practical example of unsupervised learning what are neural networks mcculloch pitts s neuron types of activation function types of network architectures learning processes advantages and disadvantages let us give a memory to our neural network the example of book writing software deep learning the ability of learning to learn how does deep learning work main architectures and algorithms main types of dnn available frameworks and libraries convolutional neural networks tunnel vision convolution the right architecture for a neural network test your neural network a general overview of deep learning what are the limits of deep learning deep learning the basics layers learning paradigms training validation main architectures and algorithms models for deep learning probabilistic graphic models restricted boltzmann machines deep belief networks available frameworks and libraries tensorflow hit download now

introduction to deep learning and neural networks with pythontm a practical guide is an intensive step by step guide for neuroscientists to fully understand practice and build neural networks providing math and pythontm code examples to clarify neural network calculations by book s end readers will fully understand how neural networks work starting from the simplest model $y = x$ and building from scratch details and explanations are provided on how a generic gradient descent algorithm works based on mathematical and pythontm examples teaching you how to use the gradient descent algorithm to manually perform all calculations in both the forward and backward passes of training a neural network examines the practical side of deep learning and neural networks provides a

problem based approach to building artificial neural networks using real data describes pythontm functions and features for neuroscientists uses a careful tutorial approach to describe implementation of neural networks in pythontm features math and code examples via companion website with helpful instructions for easy implementation

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learning and deep learning code this book is ideal for anyone who wants to teach computers how to learn from data

build neural network models in text vision and advanced analytics using pytorch key features learn pytorch for implementing cutting edge deep learning algorithms train your neural networks for higher speed and flexibility and learn how to implement them in various scenarios cover various advanced neural network architecture such as resnet inception densenet and more with practical examples book description deep learning powers the most intelligent systems in the world such as google voice siri and alexa advancements in powerful hardware such as gpus software frameworks such as pytorch keras tensorflow and cntk along with the availability of big data have made it easier to implement solutions to problems in the areas of text vision and advanced analytics this book will get you up and running with one of the most cutting edge deep learning libraries pytorch pytorch is grabbing the attention of deep learning researchers and data science professionals due to its accessibility efficiency and being more native to python way of development you ll start off by installing pytorch then quickly move on to learn various fundamental blocks that power modern deep learning you will also learn how to use cnn rnn lstm and other networks to solve real world problems this book explains the concepts of various state of the art deep learning architectures such as resnet densenet inception and seq2seq without diving deep into the math behind them you will also learn about gpu computing during the course of the book you will see how to train a model with pytorch and dive into complex neural networks such as generative networks for producing text and images by the end of the book you ll be able to implement deep learning applications in pytorch with ease what you will learn use pytorch for gpu accelerated tensor computations build custom datasets and data loaders for images and test the models using torchvision and torchtext build an image classifier by implementing cnn architectures using pytorch build systems that do text classification and language modeling using rnn lstm and gru learn advanced cnn architectures such as resnet inception densenet and learn how to use them for transfer learning learn how to mix multiple models for a powerful ensemble model generate new images using gan s and generate artistic images using style transfer who this book is for this book is for machine learning engineers data analysts data scientists interested in deep learning and are looking to explore implementing advanced algorithms in pytorch some knowledge of machine learning is helpful but not a mandatory need working knowledge of python programming is expected

delve into neural networks implement deep learning algorithms and explore layers of data abstraction with the help of tensorflow key features learn how to implement advanced techniques in deep learning with google s brainchild tensorflow explore deep neural networks and layers of data abstraction with the help of this comprehensive guide gain real world contextualization through some deep learning problems concerning research and application book description deep learning is a branch of machine learning algorithms based on learning multiple levels of abstraction neural networks which are at the core of deep learning are being used in predictive analytics computer vision natural language processing time series forecasting and to perform a myriad of other complex tasks this book is conceived for developers data analysts machine learning practitioners and deep learning enthusiasts who want to build powerful robust and accurate predictive models with the power of tensorflow combined with other open source python libraries throughout the book you ll learn how to develop deep learning applications for machine learning systems using feedforward neural networks convolutional neural networks recurrent neural networks autoencoders and factorization machines discover how to attain deep learning programming on gpu in a distributed way you ll come away with an in depth knowledge of machine learning techniques and the skills to apply them to real world projects what you will learn apply deep machine intelligence and gpu computing with tensorflow access public datasets and use tensorflow to load process and transform the data discover how to use the high level tensorflow api to build more powerful applications use deep learning for scalable object detection and mobile computing train machines quickly to learn from data by exploring reinforcement learning techniques explore active areas of deep learning research and applications who this book is for the book is for people interested in machine learning and machine intelligence a rudimentary level of programming in one language is assumed as is a basic familiarity with computer science techniques and technologies including a basic awareness of computer hardware and algorithms some competence in mathematics is needed to the level of elementary linear algebra and calculus

concepts tools and techniques to explore deep learning architectures and methodologies key features explore advanced deep learning architectures using various datasets and frameworks implement deep architectures for neural network models such as cnn rnn gan and many more discover design patterns and different challenges for various deep learning architectures book description deep learning architectures are composed of multilevel nonlinear operations that represent high level abstractions this allows you to learn useful feature representations from the data this book will help you learn and implement deep learning architectures to resolve various deep

learning research problems hands on deep learning architectures with python explains the essential learning algorithms used for deep and shallow architectures packed with practical implementations and ideas to help you build efficient artificial intelligence systems ai this book will help you learn how neural networks play a major role in building deep architectures you will understand various deep learning architectures such as alexnet vgg net googlenet with easy to follow code and diagrams in addition to this the book will also guide you in building and training various deep architectures such as the boltzmann mechanism autoencoders convolutional neural networks cnns recurrent neural networks rnns natural language processing nlp gan and more all with practical implementations by the end of this book you will be able to construct deep models using popular frameworks and datasets with the required design patterns for each architecture you will be ready to explore the potential of deep architectures in today s world what you will learnimplement cnns rnns and other commonly used architectures with pythonexplore architectures such as vggnet alexnet and googlenetbuild deep learning architectures for ai applications such as face and image recognition fraud detection and many moreunderstand the architectures and applications of boltzmann machines and autoencoders with concrete examples master artificial intelligence and neural network concepts and apply them to your architectureunderstand deep learning architectures for mobile and embedded systemswho this book is for if you re a data scientist machine learning developer engineer or deep learning practitioner or are curious about ai and want to upgrade your knowledge of various deep learning architectures this book will appeal to you you are expected to have some knowledge of statistics and machine learning algorithms to get the best out of this book

an introduction to a broad range of topics in deep learning covering mathematical and conceptual background deep learning techniques used in industry and research perspectives written by three experts in the field deep learning is the only comprehensive book on the subject elon musk cochair of openai cofounder and ceo of tesla and spacex deep learning is a form of machine learning that enables computers to learn from experience and understand the world in terms of a hierarchy of concepts because the computer gathers knowledge from experience there is no need for a human computer operator to formally specify all the knowledge that the computer needs the hierarchy of concepts allows the computer to learn complicated concepts by building them out of simpler ones a graph of these hierarchies would be many layers deep this book introduces a broad range of topics in deep learning the text offers mathematical and conceptual background covering relevant concepts in linear algebra probability theory and information theory numerical

computation and machine learning it describes deep learning techniques used by practitioners in industry including deep feedforward networks regularization optimization algorithms convolutional networks sequence modeling and practical methodology and it surveys such applications as natural language processing speech recognition computer vision online recommendation systems bioinformatics and videogames finally the book offers research perspectives covering such theoretical topics as linear factor models autoencoders representation learning structured probabilistic models monte carlo methods the partition function approximate inference and deep generative models deep learning can be used by undergraduate or graduate students planning careers in either industry or research and by software engineers who want to begin using deep learning in their products or platforms a website offers supplementary material for both readers and instructors

journey through the theory and practice of modern deep learning and apply innovative techniques to solve everyday data problems in inside deep learning you will learn how to implement deep learning with pytorch select the right deep learning components train and evaluate a deep learning model fine tune deep learning models to maximize performance understand deep learning terminology adapt existing pytorch code to solve new problems inside deep learning is an accessible guide to implementing deep learning with the pytorch framework it demystifies complex deep learning concepts and teaches you to understand the vocabulary of deep learning so you can keep pace in a rapidly evolving field no detail is skipped you ll dive into math theory and practical applications everything is clearly explained in plain english about the technology deep learning doesn t have to be a black box knowing how your models and algorithms actually work gives you greater control over your results and you don t have to be a mathematics expert or a senior data scientist to grasp what s going on inside a deep learning system this book gives you the practical insight you need to understand and explain your work with confidence about the book inside deep learning illuminates the inner workings of deep learning algorithms in a way that even machine learning novices can understand you ll explore deep learning concepts and tools through plain language explanations annotated code and dozens of instantly useful pytorch examples each type of neural network is clearly presented without complex math and every solution in this book can run using readily available gpu hardware what s inside select the right deep learning components train and evaluate a deep learning model fine tune deep learning models to maximize performance understand deep learning terminology about the reader for python programmers with basic machine learning skills about the author edward raff is

a chief scientist at booz allen hamilton and the author of the jsat machine learning library table of contents part 1 foundational methods 1 the mechanics of learning 2 fully connected networks 3 convolutional neural networks 4 recurrent neural networks 5 modern training techniques 6 common design building blocks part 2 building advanced networks 7 autoencoding and self supervision 8 object detection 9 generative adversarial networks 10 attention mechanisms 11 sequence to sequence 12 network design alternatives to rnns 13 transfer learning 14 advanced building blocks

get to grips with the essentials of deep learning by leveraging the power of pythonkey features your one stop solution to get started with the essentials of deep learning and neural network modeling train different kinds of neural networks to tackle various problems in natural language processing computer vision speech recognition and more covers popular python libraries such as tensorflow keras and more along with tips on training deploying and optimizing your deep learning models in the best possible manner deep learning a trending topic in the field of artificial intelligence today and can be considered to be an advanced form of machine learning which is quite tricky to master this book will help you take your first steps in training efficient deep learning models and applying them in various practical scenarios you will model train and deploy different kinds of neural networks such as convolutional neural network recurrent neural network and will see some of their applications in real world domains including computer vision natural language processing speech recognition and so on you will build practical projects such as chatbots implement reinforcement learning to build smart games and develop expert systems for image captioning and processing popular python library such as tensorflow is used in this book to build the models this book also covers solutions for different problems you might come across while training models such as noisy datasets small datasets and more this book does not assume any prior knowledge of deep learning by the end of this book you will have a firm understanding of the basics of deep learning and neural network modeling along with their practical applications what you will learn get to grips with the core concepts of deep learning and neural networks set up deep learning library such as tensorflow fine tune your deep learning models for nlp and computer vision applications unify different information sources such as images text and speech through deep learning optimize and fine tune your deep learning models for better performance train a deep reinforcement learning model that plays a game better than humans learn how to make your models get the best out of your gpu or cpu who this book is for aspiring data scientists and machine learning experts who have limited or no exposure to deep learning will find this book to

be very useful if you are looking for a resource that gets you up and running with the fundamentals of deep learning and neural networks this book is for you as the models in the book are trained using the popular python based libraries such as tensorflow and keras it would be useful to have sound programming knowledge of python table of contents 1 what is artificial intelligence 2 why is the artificial intelligence important 3 applications of machine learning 4 semantics probability and ia 5 numerical computation 6 sequence modeling recurrent and recursive nets 7 autoencoders 8 markov chains monte carlo methods and machine learning

drives next generation path with latest design techniques and methods in the fields of ai and deep learning key features extensive examples of machine learning and deep learning principles includes graphical demonstrations and visual tutorials for various libraries configurations and settings numerous use cases with the code snippets and examples are presented description essentials of deep learning and ai curates the essential knowledge of working on deep neural network techniques and advanced machine learning concepts this book is for those who want to know more about how deep neural networks work and advanced machine learning principles including real world examples this book includes implemented code snippets and step by step instructions for how to use them you ll be amazed at how scikit learn keras and tensorflow are used in ai applications to speed up the learning process and produce superior results with the help of detailed examples and code templates you ll be running your scripts in no time you will practice constructing models and optimise performance while working in an ai environment readers will be able to start writing their programmes with confidence and ease experts and newcomers alike will have access to advanced methodologies for easier reading concept explanations are presented straightforwardly with all relevant facts included what you will learn learn feature engineering using a variety of autoencoders cnns and lstms get to explore time series computer vision and nlp models with insightful examples dive deeper into activation and loss functions with various scenarios get the experience of deep learning and ai across iot telecom and health care build a strong foundation around ai ml and deep learning principles and key concepts who this book is for this book targets machine learning engineers data scientists data engineers business intelligence analysts and software developers who wish to gain a firm grasp on the fundamentals of deep learning and artificial intelligence readers should have a working knowledge of computer programming concepts table of contents 1 introduction 2 supervised machine learning 3 system analysis with machine learning un supervised learning 4 feature engineering 5 classification clustering association rules and regression 6 time series analysis 7 data cleanup

characteristics and feature selection 8 ensemble model development 9 design with deep learning 10 design with multi layered perceptron mlp 11 long short term memory networks 12 autoencoders 13 applications of machine learning and deep learning 14 emerging and future technologies

deep learning neural networks have become easy to define and fit but are still hard to configure discover exactly how to improve the performance of deep learning neural network models on your predictive modeling projects with clear explanations standard python libraries and step by step tutorial lessons you ll discover how to better train your models reduce overfitting and make more accurate predictions

this book introduces basic machine learning concepts and applications for a broad audience that includes students faculty and industry practitioners we begin by describing how machine learning provides capabilities to computers and embedded systems to learn from data a typical machine learning algorithm involves training and generally the performance of a machine learning model improves with more training data deep learning is a sub area of machine learning that involves extensive use of layers of artificial neural networks typically trained on massive amounts of data machine and deep learning methods are often used in contemporary data science tasks to address the growing data sets and detect cluster and classify data patterns although machine learning commercial interest has grown relatively recently the roots of machine learning go back to decades ago we note that nearly all organizations including industry government defense and health are using machine learning to address a variety of needs and applications the machine learning paradigms presented can be broadly divided into the following three categories supervised learning unsupervised learning and semi supervised learning supervised learning algorithms focus on learning a mapping function and they are trained with supervision on labeled data supervised learning is further sub divided into classification and regression algorithms unsupervised learning typically does not have access to ground truth and often the goal is to learn or uncover the hidden pattern in the data through semi supervised learning one can effectively utilize a large volume of unlabeled data and a limited amount of labeled data to improve machine learning model performances deep learning and neural networks are also covered in this book deep neural networks have attracted a lot of interest during the last ten years due to the availability of graphics processing units gpu computational power big data and new

software platforms they have strong capabilities in terms of learning complex mapping functions for different types of data we organize the book as follows the book starts by introducing concepts in supervised unsupervised and semi supervised learning several algorithms and their inner workings are presented within these three categories we then continue with a brief introduction to artificial neural network algorithms and their properties in addition we cover an array of applications and provide extensive bibliography the book ends with a summary of the key machine learning concepts

a good book is like a teacher who sits behind the reader and guides him her accordingly deep learning has been an area of current research after toiling through the various concepts of deep learning the book slithers around all principles of deep learning this book highlights in deep the concepts of deep learning so that new projects and researchers can be done the book serves both as textbook and as a reference book some of the highlights of the book are simple language recent concepts of machine and deep learning explained mcq s conceptual short questions answers case studies case tools like tensorflow h2o etc

deep learning simplified by taking supervised unsupervised and reinforcement learning to the next level using the python ecosystem key features build deep learning models with transfer learning principles in python implement transfer learning to solve real world research problems perform complex operations such as image captioning neural style transfer book description transfer learning is a machine learning ml technique where knowledge gained during training a set of problems can be used to solve other similar problems the purpose of this book is two fold firstly we focus on detailed coverage of deep learning dl and transfer learning comparing and contrasting the two with easy to follow concepts and examples the second area of focus is real world examples and research problems using tensorflow keras and the python ecosystem with hands on examples the book starts with the key essential concepts of ml and dl followed by depiction and coverage of important dl architectures such as convolutional neural networks cnns deep neural networks dnns recurrent neural networks rnns long short term memory lstm and capsule networks our focus then shifts to transfer learning concepts such as model freezing fine tuning pre trained models including vgg inception resnet and how these systems perform better than dl models with practical examples in the concluding chapters we will focus on a multitude of real world case studies and problems associated with areas such as computer vision audio analysis and natural language processing nlp by the end of this book you will be

able to implement both dl and transfer learning principles in your own systems what you will learn set up your own dl environment with graphics processing unit gpu and cloud support delve into transfer learning principles with ml and dl models explore various dl architectures including cnn lstm and capsule networks learn about data and network representation and loss functions get to grips with models and strategies in transfer learning walk through potential challenges in building complex transfer learning models from scratch explore real world research problems related to computer vision and audio analysis understand how transfer learning can be leveraged in nlp who this book is for hands on transfer learning with python is for data scientists machine learning engineers analysts and developers with an interest in data and applying state of the art transfer learning methodologies to solve tough real world problems basic proficiency in machine learning and python is required

trends in deep learning methodologies algorithms applications and systems covers deep learning approaches such as neural networks deep belief networks recurrent neural networks convolutional neural networks deep auto encoder and deep generative networks which have emerged as powerful computational models chapters elaborate on these models which have shown significant success in dealing with massive data for a large number of applications given their capacity to extract complex hidden features and learn efficient representation in unsupervised settings chapters investigate deep learning based algorithms in a variety of application including biomedical and health informatics computer vision image processing and more in recent years many powerful algorithms have been developed for matching patterns in data and making predictions about future events the major advantage of deep learning is to process big data analytics for better analysis and self adaptive algorithms to handle more data deep learning methods can deal with multiple levels of representation in which the system learns to abstract higher level representations of raw data earlier it was a common requirement to have a domain expert to develop a specific model for each specific application however recent advancements in representation learning algorithms allow researchers across various subject domains to automatically learn the patterns and representation of the given data for the development of specific models provides insights into the theory algorithms implementation and the application of deep learning techniques covers a wide range of applications of deep learning across smart healthcare and smart engineering investigates the development of new models and how they can be exploited to find appropriate solutions

deep learning a comprehensive guide provides comprehensive coverage of deep learning dl and machine learning ml concepts dl and ml are the most sought after domains requiring a deep understanding and this book gives no less than that this book enables the reader to build innovative and useful applications based on ml and dl starting with the basics of neural networks and continuing through the architecture of various types of cnns rnns lstm and more till the end of the book each and every topic is given the utmost care and shaped professionally and comprehensively key features includes the smooth transition from ml concepts to dl concepts line by line explanations have been provided for all the coding based examples includes a lot of real time examples and interview questions that will prepare the reader to take up a job in ml dl right away even a person with a non computer science background can benefit from this book by following the theory examples case studies and code snippets every chapter starts with the objective and ends with a set of quiz questions to test the reader s understanding includes references to the related youtube videos that provide additional guidance ai is a domain for everyone this book is targeted toward everyone irrespective of their field of specialization graduates and researchers in deep learning will find this book useful

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