

DEEP LEARNING

with Python

THIRD EDITION

François Chollet
Matthew Watson



MANNING

Manning Deep Learning With Python

Kevin Ferguson, Max Pumperla



Manning Deep Learning With Python:

Deep Learning with R François Chollet, J.J. Allaire, 2018 Introduces deep learning systems using the powerful Keras library and its R language interface The book builds your understanding of deep learning through intuitive explanations and practical examples

Deep Reinforcement Learning in Action Brandon Brown, Alexander Zai, 2020-03-16 Summary Humans learn best from feedback we are encouraged to take actions that lead to positive results while deterred by decisions with negative consequences This reinforcement process can be applied to computer programs allowing them to solve more complex problems that classical programming cannot Deep Reinforcement Learning in Action teaches you the fundamental concepts and terminology of deep reinforcement learning along with the practical skills and techniques you ll need to implement it into your own projects Purchase of the print book includes a free eBook in PDF Kindle and ePub formats from Manning Publications About the technology Deep reinforcement learning AI systems rapidly adapt to new environments a vast improvement over standard neural networks A DRL agent learns like people do taking in raw data such as sensor input and refining its responses and predictions through trial and error About the book Deep Reinforcement Learning in Action teaches you how to program AI agents that adapt and improve based on direct feedback from their environment In this example rich tutorial you ll master foundational and advanced DRL techniques by taking on interesting challenges like navigating a maze and playing video games Along the way you ll work with core algorithms including deep Q networks and policy gradients along with industry standard tools like PyTorch and OpenAI Gym What s inside Building and training DRL networks The most popular DRL algorithms for learning and problem solving Evolutionary algorithms for curiosity and multi agent learning All examples available as Jupyter Notebooks About the reader For readers with intermediate skills in Python and deep learning About the author Alexander Zai is a machine learning engineer at Amazon AI Brandon Brown is a machine learning and data analysis blogger Table of Contents PART 1 FOUNDATIONS 1 What is reinforcement learning 2 Modeling reinforcement learning problems Markov decision processes 3 Predicting the best states and actions Deep Q networks 4 Learning to pick the best policy Policy gradient methods 5 Tackling more complex problems with actor critic methods PART 2 ABOVE AND BEYOND 6 Alternative optimization methods Evolutionary algorithms 7 Distributional DQN Getting the full story 8 Curiosity driven exploration 9 Multi agent reinforcement learning 10 Interpretable reinforcement learning Attention and relational models 11 In conclusion A review and roadmap

Deep Learning with R François Chollet, 2018-01-22 Summary Deep Learning with R introduces the world of deep learning using the powerful Keras library and its R language interface The book builds your understanding of deep learning through intuitive explanations and practical examples Continue your journey into the world of deep learning with Deep Learning with R in Motion a practical hands on video course available exclusively at Manning com www.manning.com/livevideo/deep-learning-with-r-in-motion Purchase of the print book includes a free eBook in PDF Kindle and ePub formats from Manning Publications About the Technology Machine learning

has made remarkable progress in recent years Deep learning systems now enable previously impossible smart applications revolutionizing image recognition and natural language processing and identifying complex patterns in data The Keras deep learning library provides data scientists and developers working in R a state of the art toolset for tackling deep learning tasks About the Book Deep Learning with R introduces the world of deep learning using the powerful Keras library and its R language interface Initially written for Python as Deep Learning with Python by Keras creator and Google AI researcher Francois Chollet and adapted for R by RStudio founder J J Allaire this book builds your understanding of deep learning through intuitive explanations and practical examples You ll practice your new skills with R based applications in computer vision natural language processing and generative models What s Inside Deep learning from first principles Setting up your own deep learning environment Image classification and generation Deep learning for text and sequences About the Reader You ll need intermediate R programming skills No previous experience with machine learning or deep learning is assumed About the Authors Francois Chollet is a deep learning researcher at Google and the author of the Keras library J J Allaire is the founder of RStudio and the author of the R interfaces to TensorFlow and Keras Table of Contents PART 1 FUNDAMENTALS OF DEEP LEARNING What is deep learning Before we begin the mathematical building blocks of neural networks Getting started with neural networks Fundamentals of machine learning PART 2 DEEP LEARNING IN PRACTICE Deep learning for computer vision Deep learning for text and sequences Advanced deep learning best practices Generative deep learning Conclusions

Deep Learning with Python Francois Chollet, 2017-11-30 Summary Deep Learning with Python introduces the field of deep learning using the Python language and the powerful Keras library Written by Keras creator and Google AI researcher Francois Chollet this book builds your understanding through intuitive explanations and practical examples Purchase of the print book includes a free eBook in PDF Kindle and ePub formats from Manning Publications About the Technology Machine learning has made remarkable progress in recent years We went from near unusable speech and image recognition to near human accuracy We went from machines that couldn t beat a serious Go player to defeating a world champion Behind this progress is deep learning a combination of engineering advances best practices and theory that enables a wealth of previously impossible smart applications About the Book Deep Learning with Python introduces the field of deep learning using the Python language and the powerful Keras library Written by Keras creator and Google AI researcher Francois Chollet this book builds your understanding through intuitive explanations and practical examples You ll explore challenging concepts and practice with applications in computer vision natural language processing and generative models By the time you finish you ll have the knowledge and hands on skills to apply deep learning in your own projects What s Inside Deep learning from first principles Setting up your own deep learning environment Image classification models Deep learning for text and sequences Neural style transfer text generation and image generation About the Reader Readers need intermediate Python skills No previous experience with Keras TensorFlow or machine learning is required About the Author

Fran ois Chollet works on deep learning at Google in Mountain View CA He is the creator of the Keras deep learning library as well as a contributor to the TensorFlow machine learning framework He also does deep learning research with a focus on computer vision and the application of machine learning to formal reasoning His papers have been published at major conferences in the field including the Conference on Computer Vision and Pattern Recognition CVPR the Conference and Workshop on Neural Information Processing Systems NIPS the International Conference on Learning Representations ICLR and others Table of Contents PART 1 FUNDAMENTALS OF DEEP LEARNING What is deep learning Before we begin the mathematical building blocks of neural networks Getting started with neural networks Fundamentals of machine learning PART 2 DEEP LEARNING IN PRACTICE Deep learning for computer vision Deep learning for text and sequences Advanced deep learning best practices Generative deep learning Conclusions appendix A Installing Keras and its dependencies on Ubuntu appendix B Running Jupyter notebooks on an EC2 GPU instance *Natural Language Processing in Action* Hannes Hapke, Cole Howard, Hobson Lane, 2019-03-16 Summary *Natural Language Processing in Action* is your guide to creating machines that understand human language using the power of Python with its ecosystem of packages dedicated to NLP and AI Purchase of the print book includes a free eBook in PDF Kindle and ePub formats from Manning Publications About the Technology Recent advances in deep learning empower applications to understand text and speech with extreme accuracy The result Chatbots that can imitate real people meaningful resume to job matches superb predictive search and automatically generated document summaries all at a low cost New techniques along with accessible tools like Keras and TensorFlow make professional quality NLP easier than ever before About the Book *Natural Language Processing in Action* is your guide to building machines that can read and interpret human language In it you ll use readily available Python packages to capture the meaning in text and react accordingly The book expands traditional NLP approaches to include neural networks modern deep learning algorithms and generative techniques as you tackle real world problems like extracting dates and names composing text and answering free form questions What s inside Some sentences in this book were written by NLP Can you guess which ones Working with Keras TensorFlow gensim and scikit learn Rule based and data based NLP Scalable pipelines About the Reader This book requires a basic understanding of deep learning and intermediate Python skills About the Author Hobson Lane Cole Howard and Hannes Max Hapke are experienced NLP engineers who use these techniques in production Table of Contents PART 1 WORDY MACHINES Packets of thought NLP overview Build your vocabulary word tokenization Math with words TF IDF vectors Finding meaning in word counts semantic analysis PART 2 DEEPER LEARNING NEURAL NETWORKS Baby steps with neural networks perceptrons and backpropagation Reasoning with word vectors Word2vec Getting words in order with convolutional neural networks CNNs Loopy recurrent neural networks RNNs Improving retention with long short term memory networks Sequence to sequence models and attention PART 3 GETTING REAL REAL WORLD NLP CHALLENGES Information extraction named entity extraction and question

answering Getting chatty dialog engines Scaling up optimization parallelization and batch processing **Machine Learning with TensorFlow, Second Edition** Chris Mattmann, 2020-12-23 Updated with new code new projects and new chapters Machine Learning with TensorFlow Second Edition gives readers a solid foundation in machine learning concepts and the TensorFlow library Summary Updated with new code new projects and new chapters Machine Learning with TensorFlow Second Edition gives readers a solid foundation in machine learning concepts and the TensorFlow library Written by NASA JPL Deputy CTO and Principal Data Scientist Chris Mattmann all examples are accompanied by downloadable Jupyter Notebooks for a hands on experience coding TensorFlow with Python New and revised content expands coverage of core machine learning algorithms and advancements in neural networks such as VGG Face facial identification classifiers and deep speech classifiers Purchase of the print book includes a free eBook in PDF Kindle and ePub formats from Manning Publications About the technology Supercharge your data analysis with machine learning ML algorithms automatically improve as they process data so results get better over time You don t have to be a mathematician to use ML Tools like Google s TensorFlow library help with complex calculations so you can focus on getting the answers you need About the book Machine Learning with TensorFlow Second Edition is a fully revised guide to building machine learning models using Python and TensorFlow You ll apply core ML concepts to real world challenges such as sentiment analysis text classification and image recognition Hands on examples illustrate neural network techniques for deep speech processing facial identification and auto encoding with CIFAR 10 What s inside Machine Learning with TensorFlow Choosing the best ML approaches Visualizing algorithms with TensorBoard Sharing results with collaborators Running models in Docker About the reader Requires intermediate Python skills and knowledge of general algebraic concepts like vectors and matrices Examples use the super stable 1.15.x branch of TensorFlow and TensorFlow 2.x About the author Chris Mattmann is the Division Manager of the Artificial Intelligence Analytics and Innovation Organization at NASA Jet Propulsion Lab The first edition of this book was written by Nishant Shukla with Kenneth Fricklas Table of Contents PART 1 YOUR MACHINE LEARNING RIG 1 A machine learning odyssey 2 TensorFlow essentials PART 2 CORE LEARNING ALGORITHMS 3 Linear regression and beyond 4 Using regression for call center volume prediction 5 A gentle introduction to classification 6 Sentiment classification Large movie review dataset 7 Automatically clustering data 8 Inferring user activity from Android accelerometer data 9 Hidden Markov models 10 Part of speech tagging and word sense disambiguation PART 3 THE NEURAL NETWORK PARADIGM 11 A peek into autoencoders 12 Applying autoencoders The CIFAR 10 image dataset 13 Reinforcement learning 14 Convolutional neural networks 15 Building a real world CNN VGG Face ad VGG Face Lite 16 Recurrent neural networks 17 LSTMs and automatic speech recognition 18 Sequence to sequence models for chatbots 19 Utility landscape *Deep Learning with Python* François Chollet, 2018 **Probabilistic Deep Learning** Beate Sick, Oliver Duerr, 2020-10-11 Probabilistic Deep Learning is a hands on guide to the principles that support neural networks Learn to

improve network performance with the right distribution for different data types and discover Bayesian variants that can state their own uncertainty to increase accuracy This book provides easy to apply code and uses popular frameworks to keep you focused on practical applications Summary Probabilistic Deep Learning With Python Keras and TensorFlow Probability teaches the increasingly popular probabilistic approach to deep learning that allows you to refine your results more quickly and accurately without much trial and error testing Emphasizing practical techniques that use the Python based Tensorflow Probability Framework you ll learn to build highly performant deep learning applications that can reliably handle the noise and uncertainty of real world data Purchase of the print book includes a free eBook in PDF Kindle and ePub formats from Manning Publications About the technology The world is a noisy and uncertain place Probabilistic deep learning models capture that noise and uncertainty pulling it into real world scenarios Crucial for self driving cars and scientific testing these techniques help deep learning engineers assess the accuracy of their results spot errors and improve their understanding of how algorithms work About the book Probabilistic Deep Learning is a hands on guide to the principles that support neural networks Learn to improve network performance with the right distribution for different data types and discover Bayesian variants that can state their own uncertainty to increase accuracy This book provides easy to apply code and uses popular frameworks to keep you focused on practical applications What s inside Explore maximum likelihood and the statistical basis of deep learning Discover probabilistic models that can indicate possible outcomes Learn to use normalizing flows for modeling and generating complex distributions Use Bayesian neural networks to access the uncertainty in the model About the reader For experienced machine learning developers About the author Oliver D rrr is a professor at the University of Applied Sciences in Konstanz Germany Beate Sick holds a chair for applied statistics at ZHAW and works as a researcher and lecturer at the University of Zurich Elvis Murina is a data scientist Table of Contents PART 1 BASICS OF DEEP LEARNING 1 Introduction to probabilistic deep learning 2 Neural network architectures 3 Principles of curve fitting PART 2 MAXIMUM LIKELIHOOD APPROACHES FOR PROBABILISTIC DL MODELS 4 Building loss functions with the likelihood approach 5 Probabilistic deep learning models with TensorFlow Probability 6 Probabilistic deep learning models in the wild PART 3 BAYESIAN APPROACHES FOR PROBABILISTIC DL MODELS 7 Bayesian learning 8 Bayesian neural networks

Machine Learning Engineering in Action Ben Wilson, 2022-04-26 Ben introduces his personal toolbox of techniques for building deployable and maintainable production machine learning systems You ll learn the importance of Agile methodologies for fast prototyping and conferring with stakeholders while developing a new appreciation for the importance of planning Adopting well established software development standards will help you deliver better code management and make it easier to test scale and even reuse your machine learning code Every method is explained in a friendly peer to peer style and illustrated with production ready source code About the Technology Deliver maximum performance from your models and data This collection of reproducible techniques will help you build stable data pipelines efficient application workflows and

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Deep Learning Patterns and Practices Andrew Ferlitsch,2021-10-12 Discover best practices reproducible architectures and design patterns to help guide deep learning models from the lab into production In Deep Learning Patterns and Practices you will learn Internal functioning of modern convolutional neural networks Procedural reuse design pattern for CNN architectures Models for mobile and IoT devices Assembling large scale model deployments Optimizing hyperparameter tuning Migrating a model to a production environment The big challenge of deep learning lies in taking cutting edge technologies from R D labs through to production Deep Learning Patterns and Practices is here to help This unique guide lays out the latest deep learning insights from author Andrew Ferlitsch s work with Google Cloud AI In it you ll find deep learning models presented in a unique new way as extendable design patterns you can easily plug and play into your software projects Each valuable technique is presented in a way that s easy to understand and filled with accessible diagrams and code samples Purchase of the print book includes a free eBook in PDF Kindle and ePub formats from Manning Publications About the technology Discover best practices design patterns and reproducible architectures that will guide your deep learning projects from the lab into production This awesome book collects and illuminates the most relevant insights from a decade of real world deep learning experience You ll build your skills and confidence with each interesting example About the book Deep Learning Patterns and Practices is a deep dive into building successful deep learning applications You ll save hours of trial and error by applying proven patterns and practices to your own projects Tested code samples real world examples and a brilliant narrative style make even complex concepts simple and engaging Along the way you ll get tips for deploying testing and maintaining your projects What s inside Modern convolutional neural networks Design pattern for CNN architectures Models for mobile and IoT devices Large scale model deployments Examples for computer vision About the reader For machine learning engineers familiar with Python and deep learning About the author Andrew Ferlitsch is an expert on computer vision deep learning and operationalizing ML in production at Google Cloud AI Developer Relations Table of Contents PART 1 DEEP LEARNING FUNDAMENTALS 1 Designing modern machine learning 2 Deep neural networks 3 Convolutional and residual neural networks 4 Training fundamentals PART 2 BASIC DESIGN PATTERN 5 Procedural design pattern 6 Wide convolutional neural networks 7 Alternative connectivity patterns 8 Mobile convolutional neural networks 9 Autoencoders PART 3 WORKING WITH PIPELINES 10 Hyperparameter tuning 11 Transfer learning 12 Data distributions 13 Data pipeline 14 Training and deployment pipeline

Deep Learning with Python, Second Edition Francois Chollet,2021-12-07 Unlock the groundbreaking advances of deep learning with this extensively revised edition of the bestselling original Learn directly from the creator of Keras and master practical Python deep learning techniques that are easy to apply in the real world In Deep Learning with Python Second Edition you will learn Deep learning from first principles Image classification image

segmentation Timeseries forecasting Text classification and machine translation Text generation neural style transfer and image generation Deep Learning with Python has taught thousands of readers how to put the full capabilities of deep learning into action This extensively revised second edition introduces deep learning using Python and Keras and is loaded with insights for both novice and experienced ML practitioners You ll learn practical techniques that are easy to apply in the real world and important theory for perfecting neural networks Purchase of the print book includes a free eBook in PDF Kindle and ePub formats from Manning Publications About the technology Recent innovations in deep learning unlock exciting new software capabilities like automated language translation image recognition and more Deep learning is becoming essential knowledge for every software developer and modern tools like Keras and TensorFlow put it within your reach even if you have no background in mathematics or data science About the book Deep Learning with Python Second Edition introduces the field of deep learning using Python and the powerful Keras library In this new edition Keras creator Francois Chollet offers insights for both novice and experienced machine learning practitioners As you move through this book you ll build your understanding through intuitive explanations crisp illustrations and clear examples You ll pick up the skills to start developing deep learning applications What s inside Deep learning from first principles Image classification and image segmentation Time series forecasting Text classification and machine translation Text generation neural style transfer and image generation About the reader For readers with intermediate Python skills No previous experience with Keras TensorFlow or machine learning is required About the author Francois Chollet is a software engineer at Google and creator of the Keras deep learning library Table of Contents 1 What is deep learning 2 The mathematical building blocks of neural networks 3 Introduction to Keras and TensorFlow 4 Getting started with neural networks Classification and regression 5 Fundamentals of machine learning 6 The universal workflow of machine learning 7 Working with Keras A deep dive 8 Introduction to deep learning for computer vision 9 Advanced deep learning for computer vision 10 Deep learning for timeseries 11 Deep learning for text 12 Generative deep learning 13 Best practices for the real world 14 Conclusions

Machine and Deep Learning Algorithms and Applications Uday Shankar Shanthamallu, Andreas Spanias, 2022-05-31 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

Deep Learning Stephane Tuffery, 2022-11-14 DEEP LEARNING A concise and practical exploration of key topics and applications in data science In Deep Learning From Big Data to Artificial Intelligence with R expert researcher Dr St phane Tuff ry delivers an insightful discussion of the applications of deep learning and big data that focuses on practical instructions on various software tools and deep learning methods relying on three major libraries MXNet PyTorch and Keras TensorFlow In the book numerous up to date examples are combined with key topics relevant to modern data scientists including processing optimization neural network applications natural language processing and image recognition This is a thoroughly revised and updated edition of a book originally released in French with new examples and methods included throughout Classroom tested and intuitively organized Deep Learning From Big Data to Artificial Intelligence with R offers complimentary access to a companion website that provides R and Python source code for the examples offered in the book Readers will also find A thorough introduction to practical deep learning techniques with explanations and examples for various programming libraries Comprehensive explorations of a variety of applications for deep learning including image recognition and natural language processing Discussions of the theory of deep learning neural networks and artificial intelligence linked to concrete techniques and strategies commonly used to solve real world problems Perfect for graduate students studying data science big data deep learning and artificial intelligence Deep Learning From Big Data to Artificial Intelligence with R will also earn a place in the libraries of data science researchers and practicing data scientists

Learning Deep Textwork René-Marcel Kruse, Benjamin Säfken, Alexander Silbersdorff, Christoph Weisser, 2021 Artificial intelligence is considered to be one of the most decisive topics in the 21st century Deep learning algorithms which

are the basis of many artificial intelligence applications are of central interest for researchers but also for students that strive to build up academic knowledge and practical competencies in this field The Deep Learning Seminar at the University of G ttingen follows the central notion of the Humboldtian model of higher education and offers graduate students of applied statistics the opportunity to conduct their own research The quality of the results motivated us to publish the most promising seminar papers in this volume For the selected papers a review process was conducted by the lecturers The presented contributions focus on applications of deep learning algorithms for text data Natural language processing methods are for example applied to analyse data from Twitter Telegram and Newspapers The research applications allow the reader to gain deep insights into some of the latest developments in the field of artificial intelligence and natural language processing from the perspective of students of whom many will take part in shaping the future research in this field

Practical Machine Learning for Data Analysis Using Python Abdulhamit Subasi,2020-06-05 Practical Machine Learning for Data Analysis Using Python is a problem solver s guide for creating real world intelligent systems It provides a comprehensive approach with concepts practices hands on examples and sample code The book teaches readers the vital skills required to understand and solve different problems with machine learning It teaches machine learning techniques necessary to become a successful practitioner through the presentation of real world case studies in Python machine learning ecosystems The book also focuses on building a foundation of machine learning knowledge to solve different real world case studies across various fields including biomedical signal analysis healthcare security economics and finance Moreover it covers a wide range of machine learning models including regression classification and forecasting The goal of the book is to help a broad range of readers including IT professionals analysts developers data scientists engineers and graduate students to solve their own real world problems Offers a comprehensive overview of the application of machine learning tools in data analysis across a wide range of subject areas Teaches readers how to apply machine learning techniques to biomedical signals financial data and healthcare data Explores important classification and regression algorithms as well as other machine learning techniques Explains how to use Python to handle data extraction manipulation and exploration techniques as well as how to visualize data spread across multiple dimensions and extract useful features

Handbook of Python Navigating AI and Machine Learning Dr. Preeti Yadav,Dr. Vinay Rishiwal,Dr. Mano Yadav,2024-11-24 In the vast landscape of programming languages Python stands out as a versatile and powerful tool that has gained immense popularity in recent years With its clean syntax ease of use and extensive libraries Python has become the go to choice for beginners and experienced developers alike This chapter serves as a comprehensive introduction to the fundamental concepts and building blocks of Python programming

Deep Learning with Python Video Edition François Chollet,2017 Deep Learning with Python introduces the field of deep learning using the Python language and the powerful Keras library Written by Keras creator and Google AI researcher Fran ois Chollet this book builds your understanding through intuitive explanations and practical examples Machine learning

has made remarkable progress in recent years We went from near unusable speech and image recognition to near human accuracy We went from machines that couldn't beat a serious Go player to defeating a world champion Behind this progress is deep learning a combination of engineering advances best practices and theory that enables a wealth of previously impossible smart applications Resource description page *Deep Learning Models for Economic Research* Andrzej Dudek,2025-10-21 In today's data driven world the ability to make sense of complex high dimensional datasets is crucial for economists and data scientists Traditional quantitative methods while powerful often struggle to keep up with the complexities of modern economic challenges This book bridges this gap integrating cutting edge machine learning techniques with established economic analysis to provide new more accurate insights The book offers a comprehensive approach to understanding and applying neural networks and deep learning models in the context of conducting economic research It starts by laying the groundwork with essential quantitative methods such as cluster analysis regression and factor analysis then demonstrates how these can be enhanced with deep learning techniques like recurrent neural networks RNNs convolutional neural networks CNNs and transformers By guiding readers through real world examples complete with Python code and access to datasets it showcases the practical benefits of neural networks in solving complex economic problems such as fraud detection sentiment analysis stock price forecasting and inflation factor analysis Importantly the book also addresses critical concerns about the black box nature of deep learning offering interpretability techniques like Local Interpretable Model agnostic Explanations LIME and SHapley Additive exPlanations SHAP to demystify model predictions The book is essential reading for economists data scientists and professionals looking to deepen their understanding of AI's role in economic modeling It is also an accessible resource for non experts interested in how machine learning is transforming economic analysis *Industrial Internet of Things (IIoT)* R. Anandan,Suseendran Gopalakrishnan,Souvik Pal,Noor Zaman,2022-02-09 INDUSTRIAL INTERNET OF THINGS IIOT This book discusses how the industrial internet will be augmented through increased network agility integrated artificial intelligence AI and the capacity to deploy automate orchestrate and secure diverse user cases at hyperscale Since the internet of things IoT dominates all sectors of technology from home to industry automation through IoT devices is changing the processes of our daily lives For example more and more businesses are adopting and accepting industrial automation on a large scale with the market for industrial robots expected to reach 73.5 billion in 2023 The primary reason for adopting IoT industrial automation in businesses is the benefits it provides including enhanced efficiency high accuracy cost effectiveness quick process completion low power consumption fewer errors and ease of control The 15 chapters in the book showcase industrial automation through the IoT by including case studies in the areas of the IIoT robotic and intelligent systems and web based applications which will be of interest to working professionals and those in education and research involved in a broad cross section of technical disciplines The volume will help industry leaders by Advancing hands on experience working with industrial architecture Demonstrating the

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Neural Network Advancements in the Age of AI Benziane, Sarah, Guerroudji Meddah, Fatiha, 2025-05-29 Emerging trends such as explainable artificial intelligence XAI few shot learning and neural architecture search NAS push the boundaries of current neural networks These cutting edge networks are transforming the design and efficiency in modern applications including computer vision natural language processing NLP and autonomous systems They enable engineers and data scientists to design efficient models accelerating innovation in sectors like healthcare biotechnology and smart systems The practical implementation techniques of these advanced neural networks are ideal for optimizing neural networks in real world scenarios and solving real world problems Neural Network Advancements in the Age of AI provides a comprehensive exploration of neural networks emphasizing both the theoretical foundations and practical applications across various fields It bridges the gap between theory and practice making neural networks accessible to both researchers and practitioners Covering topics such as machine translation predictive maintenance and skill acquisition this book is an excellent resource for AI engineers data scientists software developers healthcare professionals financial practitioners engineers computer scientists professionals researchers scholars academicians and more

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