

# STATISTICAL AND MACHINE LEARNING DATA MINING

MACHINE LEARNING AND ARTIFICIAL INTELLIGENCE PRACTICAL APPROACH FOR MACHINE LEARNING AND DEEP LEARNING ALGORITHMS INTRODUCTION TO MACHINE LEARNING INTRODUCTION TO AI AND MACHINE LEARNING AN INTRODUCTION TO MACHINE LEARNING MACHINE LEARNING FOR DUMMIES MACHINE LEARNING AND ARTIFICIAL INTELLIGENCE MACHINE LEARNING MACHINE LEARNING AND DEEP LEARNING WITH PYTHON BEGINNING WITH MACHINE LEARNING MACHINE LEARNING WITH PYTHON MACHINE LEARNING ARTIFICIAL INTELLIGENCE AND MACHINE LEARNING MACHINE INTELLIGENCE MACHINE LEARNING AND DEEP LEARNING IN REAL-TIME APPLICATIONS HANDS-ON ARTIFICIAL INTELLIGENCE WITH TENSORFLOW MACHINE AND DEEP LEARNING ALGORITHMS AND APPLICATIONS APPLICATIONS OF ARTIFICIAL INTELLIGENCE AND MACHINE LEARNING FUNDAMENTALS AND METHODS OF MACHINE AND DEEP LEARNING EXPLAINABLE ARTIFICIAL INTELLIGENCE: AN INTRODUCTION TO INTERPRETABLE MACHINE LEARNING AMEET V JOSHI PANDEY ABHISHEK KUMAR ETHEM ALPAYDIN DISRUPT.CO.NZ GOPINATH REBALA LUCA MASSARON REZA RAWASSIZADEH JAMES CHEN DR. AMIT DUA OLIVER THEOBALD SAMUEL HACK Lyla B. Das SURESH SAMUDRALA MAHRISHI, MEHUL AMIR ZIAI UDAY SHANKAR SHANTHAMALLU ANKUR CHOUDHARY PRADEEP SINGH UDAY KAMATH

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THIS BOOK PROVIDES COMPREHENSIVE COVERAGE OF COMBINED ARTIFICIAL INTELLIGENCE AI AND

MACHINE LEARNING ML THEORY AND APPLICATIONS RATHER THAN LOOKING AT THE FIELD FROM ONLY A THEORETICAL OR ONLY A PRACTICAL PERSPECTIVE THIS BOOK UNIFIES BOTH PERSPECTIVES TO GIVE HOLISTIC UNDERSTANDING THE FIRST PART INTRODUCES THE CONCEPTS OF AI AND ML AND THEIR ORIGIN AND CURRENT STATE THE SECOND AND THIRD PARTS DELVE INTO CONCEPTUAL AND THEORETIC ASPECTS OF STATIC AND DYNAMIC ML TECHNIQUES THE FORTH PART DESCRIBES THE PRACTICAL APPLICATIONS WHERE PRESENTED TECHNIQUES CAN BE APPLIED THE FIFTH PART INTRODUCES THE USER TO SOME OF THE IMPLEMENTATION STRATEGIES FOR SOLVING REAL LIFE ML PROBLEMS THE BOOK IS APPROPRIATE FOR STUDENTS IN GRADUATE AND UPPER UNDERGRADUATE COURSES IN ADDITION TO RESEARCHERS AND PROFESSIONALS IT MAKES MINIMAL USE OF MATHEMATICS TO MAKE THE TOPICS MORE INTUITIVE AND ACCESSIBLE PRESENTS A FULL REFERENCE TO ARTIFICIAL INTELLIGENCE AND MACHINE LEARNING TECHNIQUES IN THEORY AND APPLICATION PROVIDES A GUIDE TO AI AND ML WITH MINIMAL USE OF MATHEMATICS TO MAKE THE TOPICS MORE INTUITIVE AND ACCESSIBLE CONNECTS ALL ML AND AI TECHNIQUES TO APPLICATIONS AND INTRODUCES IMPLEMENTATIONS

GUIDE COVERING TOPICS FROM MACHINE LEARNING REGRESSION MODELS NEURAL NETWORK TO TENSOR FLOW KEY FEATURES MACHINE LEARNING IN MATLAB USING BASIC CONCEPTS AND ALGORITHMS DERIVING AND ACCESSING OF DATA IN MATLAB AND NEXT PRE PROCESSING AND PREPARATION OF DATA MACHINE LEARNING WORKFLOW FOR HEALTH MONITORING THE NEURAL NETWORK DOMAIN AND IMPLEMENTATION IN MATLAB WITH EXPLICIT EXPLANATION OF CODE AND RESULTS HOW PREDICTIVE MODEL CAN BE IMPROVED USING MATLAB MATLAB CODE FOR AN ALGORITHM IMPLEMENTATION RATHER THAN FOR MATHEMATICAL FORMULA MACHINE LEARNING WORKFLOW FOR HEALTH MONITORING DESCRIPTION MACHINE LEARNING IS MOSTLY SOUGHT IN THE RESEARCH FIELD AND HAS BECOME AN INTEGRAL PART OF MANY RESEARCH PROJECTS NOWADAYS INCLUDING COMMERCIAL APPLICATIONS AS WELL AS ACADEMIC RESEARCH APPLICATION OF MACHINE LEARNING RANGES FROM FINDING FRIENDS ON SOCIAL NETWORKING SITES TO MEDICAL DIAGNOSIS AND EVEN SATELLITE PROCESSING IN THIS BOOK WE HAVE MADE AN HONEST EFFORT TO MAKE THE CONCEPTS OF MACHINE LEARNING EASY AND GIVE BASIC PROGRAMS IN MATLAB RIGHT FROM THE INSTALLATION PART ALTHOUGH THE REAL TIME APPLICATION OF MACHINE LEARNING IS ENDLESS HOWEVER THE BASIC CONCEPTS AND ALGORITHMS ARE DISCUSSED USING MATLAB LANGUAGE SO THAT NOT ONLY GRADUATION STUDENTS BUT ALSO RESEARCHERS ARE BENEFITTED FROM IT WHAT WILL YOU LEARN PRE REQUISITES TO MACHINE LEARNING FINDING NATURAL PATTERNS IN DATA BUILDING CLASSIFICATION METHODS DATA PRE PROCESSING IN PYTHON BUILDING REGRESSION MODELS CREATING NEURAL NETWORKS DEEP LEARNING WHO THIS BOOK IS FORTHE BOOK IS BASICALLY MEANT FOR GRADUATE AND RESEARCH STUDENTS WHO FIND THE ALGORITHMS OF MACHINE LEARNING DIFFICULT TO IMPLEMENT WE HAVE TOUCHED ALL BASIC

ALGORITHMS OF MACHINE LEARNING IN DETAIL WITH A PRACTICAL APPROACH PRIMARILY BEGINNERS WILL FIND THIS BOOK MORE EFFECTIVE AS THE CHAPTERS ARE SUBDIVIDED IN A MANNER THAT THEY FIND THE BUILDING AND IMPLEMENTATION OF ALGORITHMS IN MATLAB INTERESTING AND EASY AT THE SAME TIME TABLE OF CONTENTS<sup>1</sup> PRE REQUISITE TO MACHINE LEARNING<sup>2</sup> AN INTRODUCTION TO MACHINE LEARNING<sup>3</sup> FINDING NATURAL PATTERNS IN DATA<sup>4</sup> BUILDING CLASSIFICATION METHODS<sup>5</sup> DATA PRE PROCESSING IN PYTHON<sup>6</sup> BUILDING REGRESSION MODELS<sup>7</sup> CREATING NEURAL NETWORKS<sup>8</sup> INTRODUCTION TO DEEP LEARNINGABOUT THE AUTHORABHISHEK KUMAR PANDEY IS PURSUING HIS DOCTORATE IN COMPUTER SCIENCE AND DONE M TECH IN COMPUTER SCI ENGINEERING HE HAS BEEN WORKING AS AN ASSISTANT PROFESSOR OF COMPUTER SCIENCE AT ARYABHATT ENGINEERING COLLEGE AND RESEARCH CENTER AJMER AND ALSO VISITING FACULTY IN GOVERNMENT UNIVERSITY MDS AJMER HE HAS TOTAL ACADEMIC TEACHING EXPERIENCE OF MORE THAN EIGHT YEARS WITH MORE THAN 50 PUBLICATIONS IN REPUTED NATIONAL AND INTERNATIONAL JOURNALS HIS RESEARCH AREA INCLUDES ARTIFICIAL INTELLIGENCE IMAGE PROCESSING COMPUTER VISION DATA MINING MACHINE LEARNING HIS BLOG VEENAPANDEY SIMPLESITE COM HIS LINKEDIN PROFILE LINKEDIN COM IN ABHISHEK PANDEY BA<sup>6</sup>A<sup>6</sup>A<sup>6</sup>4 PRAMOD SINGH RATHORE IS M TECH IN COMPUTER SCI AND ENGINEERING FROM GOVERNMENT ENGINEERING COLLEGE AJMER RAJASTHAN TECHNICAL UNIVERSITY KOTA INDIA HE HAVE BEEN WORKING AS AN ASSISTANT PROFESSOR COMPUTER SCIENCE AT ARYABHATT ENGINEERING COLLEGE AND RESEARCH CENTER AJMER AND ALSO A VISITING FACULTY IN GOVERNMENT UNIVERSITY AJMER HE HAS AUTHORED A BOOK IN NETWORK SIMULATION WHICH PUBLISHED WORLDWIDE HE HAS A TOTAL ACADEMIC TEACHING EXPERIENCE MORE THAN 7 YEARS WITH MANY PUBLICATIONS IN REPUTED NATIONAL GROUP CRC USA AND HAS 40 PUBLICATIONS AS RESEARCH PAPERS AND CHAPTERS IN REPUTED NATIONAL AND INTERNATIONAL E SCI SCOPUS HIS RESEARCH AREA INCLUDES MACHINE LEARNING NS<sup>2</sup> COMPUTER NETWORK MINING AND DBMS DR S BALAMURUGAN IS THE HEAD OF RESEARCH AND DEVELOPMENT QUANTS IS CS INDIA FORMELY HE WAS THE DIRECTOR OF RESEARCH AND DEVELOPMENT AT MINDNOTIX TECHNOLOGIES INDIA HE HAS AUTHORED CO AUTHORED 33 BOOKS AND HAS 200 PUBLICATIONS IN VARIOUS INTERNATIONAL JOURNALS AND CONFERENCES TO HIS CREDIT HE WAS AWARDED WITH THREE POST DOCTORAL DEGREES DOCTOR OF SCIENCE D SC DEGREE AND TWO DOCTOR OF LETTERS D LITT DEGREES FOR HIS SIGNIFICANT CONTRIBUTION TO RESEARCH AND DEVELOPMENT IN ENGINEERING AND IS THE RECIPIENT OF THEE BEST DIRECTOR AWARD 2018 HIS BIOGRAPHY IS LISTED IN E WORLD BOOK OF RESEARCHERS E 2018 OXFORD UK AND IN E MARQUIS WHO S WHO E 2018 ISSUE NEW JERSEY USA HE CARRIED OUT A HEALTHCARE CONSULTANCY PROJECT FOR VGM HOSPITALS BETWEEN 2013 AND 2016 AND HIS CURRENT RESEARCH PROJECTS INCLUDE E WOMEN EMPOWERMENT USING IOT E E HEALTH AWARE SMART CHAIR E E ADVANCED BRAIN SIMULATORS FOR ASSISTING PHYSIOLOGICAL MEDICINE E E DESIGNING NOVEL HEALTH BANDS E AND E

IOT BASED DEVICES FOR ASSISTING ELDERLY PEOPLE E HIS LINKEDIN PROFILE LINKEDIN COM IN DR S BALAMURUGAN 008A7512

INTRODUCTION SUPERVISED LEARNING BAYESIAN DECISION THEORY PARAMETRIC METHODS MULTIVARIATE METHODS DIMENSIONALITY REDUCTION CLUSTERING NONPARAMETRIC METHODS DECISION TREES LINEAR DISCRIMINATION MULTILAYER PERCEPTRONS LOCAL MODELS KERNEL MACHINES GRAPHICAL MODELS BRIEF CONTENTS HIDDEN MARKOV MODELS BAYESIAN ESTIMATION COMBINING MULTIPLE LEARNERS REINFORCEMENT LEARNING DESIGN AND ANALYSIS OF MACHINE LEARNING EXPERIMENTS

DISCOVER THE FASCINATING WORLD OF ARTIFICIAL INTELLIGENCE AND MACHINE LEARNING WITH INTRODUCTION TO AI AND MACHINE LEARNING A COMPREHENSIVE GUIDE THAT OPENS THE DOOR TO THE FUTURE OF TECHNOLOGY WHETHER YOU RE A CURIOUS BEGINNER OR A PROFESSIONAL LOOKING TO UPDATE YOUR SKILLS THIS BOOK PROVIDES AN ENGAGING HANDS ON INTRODUCTION TO THE REVOLUTIONARY FIELDS OF AI MACHINE LEARNING DEEP LEARNING AND NEURAL NETWORKS IN TODAY S FAST PACED DIGITAL ERA UNDERSTANDING THE FOUNDATIONS OF AI AND ML IS MORE CRITICAL THAN EVER THIS BOOK BREAKS DOWN COMPLEX CONCEPTS INTO EASILY DIGESTIBLE CHAPTERS MAKING IT THE PERFECT STARTING POINT FOR ANYONE EAGER TO EXPLORE TOPICS SUCH AS SUPERVISED LEARNING UNSUPERVISED LEARNING REINFORCEMENT LEARNING AND NATURAL LANGUAGE PROCESSING WITH CLEAR EXPLANATIONS STEP BY STEP TUTORIALS AND REAL WORLD EXAMPLES YOU LL LEARN HOW ALGORITHMS DRIVE EVERYTHING FROM COMPUTER VISION AND SPEECH RECOGNITION TO PERSONALIZED RECOMMENDATIONS AND SELF DRIVING CARS INSIDE YOU LL EMBARK ON A JOURNEY THAT BEGINS WITH THE FUNDAMENTALS OF ARTIFICIAL INTELLIGENCE EXPLORING THE HISTORY AND EVOLUTION OF MACHINE LEARNING YOU LL DISCOVER HOW DATA SCIENCE BIG DATA AND ADVANCED ALGORITHMS COME TOGETHER TO CREATE POWERFUL SYSTEMS THAT LEARN FROM DATA AND CONTINUOUSLY IMPROVE OVER TIME DETAILED DISCUSSIONS ON NEURAL NETWORKS AND DEEP LEARNING WILL GUIDE YOU THROUGH THE INTRICACIES OF DESIGNING AND TRAINING MODELS WHILE PRACTICAL EXAMPLES ENSURE YOU CAN APPLY THESE TECHNIQUES TO REAL WORLD PROBLEMS ONE OF THE BOOK S STANDOUT FEATURES IS ITS FOCUS ON PRACTICAL APPLICATIONS AND CASE STUDIES WHETHER YOU RE INTERESTED IN HEALTHCARE DIAGNOSTICS FINANCIAL FORECASTING OR AUTONOMOUS VEHICLES YOU LL FIND INSPIRING EXAMPLES OF HOW AI AND MACHINE LEARNING ARE TRANSFORMING INDUSTRIES EACH CHAPTER IS DESIGNED TO BUILD YOUR SKILLS GRADUALLY FROM THE BASICS OF DATA PREPROCESSING AND FEATURE ENGINEERING TO THE CHALLENGES OF MODEL EVALUATION AND OPTIMIZATION YOU LL GAIN VALUABLE INSIGHTS INTO BEST PRACTICES FOR DEPLOYING AI SYSTEMS IN PRODUCTION ENVIRONMENTS ENSURING THAT YOUR NEWLY ACQUIRED SKILLS TRANSLATE INTO TANGIBLE RESULTS ETHICAL CONSIDERATIONS AND THE SOCIAL IMPACT OF AI

ARE ALSO GIVEN DUE ATTENTION IN AN AGE WHERE ALGORITHMIC BIAS DATA PRIVACY AND TRANSPARENCY ARE MORE CRITICAL THAN EVER THIS BOOK PROVIDES A BALANCED VIEW ON THE RESPONSIBILITIES THAT COME WITH HARNESSING AI TECHNOLOGY LEARN ABOUT FAIRNESS ACCOUNTABILITY AND THE EMERGING STANDARDS THAT ARE SHAPING THE FUTURE OF ETHICAL AI DEVELOPMENT PACKED WITH ESSENTIAL KEYWORDS SUCH AS ARTIFICIAL INTELLIGENCE MACHINE LEARNING DEEP LEARNING NEURAL NETWORKS NATURAL LANGUAGE PROCESSING COMPUTER VISION AND ALGORITHMS THIS BOOK IS NOT JUST A TECHNICAL MANUAL IT S A ROADMAP TO UNDERSTANDING HOW MODERN TECHNOLOGY WORKS AND EVOLVES EACH SECTION IS ENRICHED WITH CLEAR DIAGRAMS PRACTICAL TIPS AND HANDS ON PROJECTS THAT EMPOWER YOU TO EXPLORE AND EXPERIMENT ON YOUR OWN WHETHER YOU RE LOOKING TO ENHANCE YOUR CAREER START A NEW PROJECT OR SIMPLY UNDERSTAND THE TECHNOLOGY THAT IS TRANSFORMING OUR WORLD INTRODUCTION TO AI AND MACHINE LEARNING IS YOUR ULTIMATE GUIDE DIVE INTO THIS EXCITING FIELD AND UNLOCK THE POTENTIAL OF AI TO DRIVE INNOVATION EFFICIENCY AND POSITIVE CHANGE IN EVERY SECTOR OF MODERN LIFE EMBRACE THE FUTURE OF TECHNOLOGY YOUR JOURNEY INTO THE REALM OF AI AND MACHINE LEARNING STARTS HERE

JUST LIKE ELECTRICITY MACHINE LEARNING WILL REVOLUTIONIZE OUR LIFE IN MANY WAYS SOME OF WHICH ARE NOT EVEN CONCEIVABLE TODAY THIS BOOK PROVIDES A THOROUGH CONCEPTUAL UNDERSTANDING OF MACHINE LEARNING TECHNIQUES AND ALGORITHMS MANY OF THE MATHEMATICAL CONCEPTS ARE EXPLAINED IN AN INTUITIVE MANNER THE BOOK STARTS WITH AN OVERVIEW OF MACHINE LEARNING AND THE UNDERLYING MATHEMATICAL AND STATISTICAL CONCEPTS BEFORE MOVING ONTO MACHINE LEARNING TOPICS IT GRADUALLY BUILDS UP THE DEPTH COVERING MANY OF THE PRESENT DAY MACHINE LEARNING ALGORITHMS ENDING IN DEEP LEARNING AND REINFORCEMENT LEARNING ALGORITHMS THE BOOK ALSO COVERS SOME OF THE POPULAR MACHINE LEARNING APPLICATIONS THE MATERIAL IN THIS BOOK IS AGNOSTIC TO ANY SPECIFIC PROGRAMMING LANGUAGE OR HARDWARE SO THAT READERS CAN TRY THESE CONCEPTS ON WHICHEVER PLATFORMS THEY ARE ALREADY FAMILIAR WITH OFFERS A COMPREHENSIVE INTRODUCTION TO MACHINE LEARNING WHILE NOT ASSUMING ANY PRIOR KNOWLEDGE OF THE TOPIC PROVIDES A COMPLETE OVERVIEW OF AVAILABLE TECHNIQUES AND ALGORITHMS IN CONCEPTUAL TERMS COVERING VARIOUS APPLICATION DOMAINS OF MACHINE LEARNING NOT TIED TO ANY SPECIFIC SOFTWARE LANGUAGE OR HARDWARE IMPLEMENTATION

THE MOST HUMAN FRIENDLY BOOK ON MACHINE LEARNING SOMEWHERE BURIED IN ALL THE SYSTEMS THAT DRIVE ARTIFICIAL INTELLIGENCE YOU LL FIND MACHINE LEARNING THE PROCESS THAT ALLOWS TECHNOLOGY TO BUILD KNOWLEDGE BASED ON DATA AND PATTERNS MACHINE LEARNING FOR DUMMIES IS AN EXCELLENT STARTING POINT FOR ANYONE WHO WANTS DEEPER INSIGHT INTO HOW ALL THIS

LEARNING ACTUALLY HAPPENS THIS BOOK OFFERS AN OVERVIEW OF MACHINE LEARNING AND ITS MOST IMPORTANT PRACTICAL APPLICATIONS THEN YOU'LL DIVE INTO THE TOOLS CODE AND MATH THAT MAKE MACHINE LEARNING GO AND YOU'LL EVEN GET STEP BY STEP INSTRUCTIONS FOR TESTING IT OUT ON YOUR OWN FOR AN EASY TO FOLLOW INTRODUCTION TO BUILDING SMART ALGORITHMS THIS DUMMIES GUIDE IS YOUR GO TO PIECE TOGETHER WHAT MACHINE LEARNING IS WHAT IT CAN DO AND WHAT IT CAN'T DO LEARN THE BASICS OF MACHINE LEARNING CODE AND HOW IT INTEGRATES WITH LARGE DATASETS UNDERSTAND THE MATHEMATICAL PRINCIPLES THAT AI USES TO MAKE ITSELF SMARTER CONSIDER REAL WORLD APPLICATIONS OF MACHINE LEARNING AND WRITE YOUR OWN ALGORITHMS WITH CLEAR EXPLANATIONS AND HANDS ON INSTRUCTION MACHINE LEARNING FOR DUMMIES IS A GREAT ENTRY LEVEL RESOURCE FOR DEVELOPERS LOOKING TO GET STARTED WITH AI AND MACHINE LEARNING

MASTERING AI MACHINE LEARNING AND DATA SCIENCE OFTEN MEANS PIECING TOGETHER CONCEPTS SCATTERED ACROSS COUNTLESS RESOURCES STATISTICS AND VISUALIZATIONS TO FOUNDATIONAL MODELS AND LARGE LANGUAGE MODELS THIS BOOK THE RESULT OF EIGHT YEARS OF EFFORT BRINGS IT ALL TOGETHER IN ONE ACCESSIBLE ENGAGING PACKAGE IT CLARIFIES ARTIFICIAL INTELLIGENCE AND DATA SCIENCE BLENDING CORE MATHEMATICAL PRINCIPLES WITH A CLEAR READER FRIENDLY APPROACH UNLIKE TRADITIONAL TEXTBOOKS THAT LEAN HEAVILY ON EQUATIONS AND MATHEMATICAL FORMALIZATION THE AUTHOR STARTS WITH MINIMAL PREREQUISITES LAYERING DEEPER MATH AS THE READER PROGRESSES EACH CONCEPT ALGORITHM OR MODEL IS UNPACKED THROUGH CLEAR HANDS ON EXAMPLES THAT BUILD THE READER'S SKILLS STEP BY STEP IT STRIKES A BALANCE BETWEEN THEORETICAL FOUNDATIONS AND PRACTICAL APPLICATION SERVING AS BOTH AN ACADEMIC REFERENCE AND A PRACTICAL GUIDE FURTHERMORE THE BOOK USES HUMOR CASUAL LANGUAGE AND COMICS TO MAKE THE CHALLENGING CONCEPTS AND TOPICS RELATABLE AND FUN ANY RESEMBLANCE BETWEEN THE JOKES AND REAL LIFE IS PURE COINCIDENCE AND NO OFFENSE IS INTENDED TABLE OF CONTENTS PART I INTRODUCTION PRELIMINARY REQUIREMENTS CHAPTER 1 BASIC CONCEPTS CHAPTER 2 VISUALIZATION CHAPTER 3 PROBABILITY AND STATISTICS PART II UNSUPERVISED LEARNING CHAPTER 4 CLUSTERING CHAPTER 5 FREQUENT ITEMSET SEQUENCE MINING AND INFORMATION RETRIEVAL PART III DATA ENGINEERING CHAPTER 6 FEATURE ENGINEERING CHAPTER 7 DIMENSIONALITY REDUCTION AND DATA DECOMPOSITION PART IV SUPERVISED LEARNING CHAPTER 8 REGRESSION ANALYSIS CHAPTER 9 CLASSIFICATION PART V NEURAL NETWORK CHAPTER 10 NEURAL NETWORKS AND DEEP LEARNING CHAPTER 11 SELF SUPERVISED DEEP LEARNING CHAPTER 12 DEEP LEARNING MODELS AND APPLICATIONS TEXT VISION AND AUDIO PART VI REINFORCEMENT LEARNING CHAPTER 13 REINFORCEMENT LEARNING PART VII OTHER ALGORITHMS AND CONCEPTS CHAPTER 14 MAKING LIGHTER NEURAL NETWORK AND MACHINE LEARNING MODELS CHAPTER 15 GRAPH MINING ALGORITHMS CHAPTER

## 16 CONCEPTS AND CHALLENGES OF WORKING WITH DATA

RECENT TIMES ARE WITNESSING RAPID DEVELOPMENT IN MACHINE LEARNING ALGORITHM SYSTEMS ESPECIALLY IN REINFORCEMENT LEARNING NATURAL LANGUAGE PROCESSING COMPUTER AND ROBOT VISION IMAGE PROCESSING SPEECH AND EMOTIONAL PROCESSING AND UNDERSTANDING IN TUNE WITH THE INCREASING IMPORTANCE AND RELEVANCE OF MACHINE LEARNING MODELS ALGORITHMS AND THEIR APPLICATIONS AND WITH THE EMERGENCE OF MORE INNOVATIVE USES CASES OF DEEP LEARNING AND ARTIFICIAL INTELLIGENCE THE CURRENT VOLUME PRESENTS A FEW INNOVATIVE RESEARCH WORKS AND THEIR APPLICATIONS IN REAL WORLD SUCH AS STOCK TRADING MEDICAL AND HEALTHCARE SYSTEMS AND SOFTWARE AUTOMATION THE CHAPTERS IN THE BOOK ILLUSTRATE HOW MACHINE LEARNING AND DEEP LEARNING ALGORITHMS AND MODELS ARE DESIGNED OPTIMIZED AND DEPLOYED THE VOLUME WILL BE USEFUL FOR ADVANCED GRADUATE AND DOCTORAL STUDENTS RESEARCHERS FACULTY MEMBERS OF UNIVERSITIES PRACTICING DATA SCIENTISTS AND DATA ENGINEERS PROFESSIONALS AND CONSULTANTS WORKING ON THE BROAD AREAS OF MACHINE LEARNING DEEP LEARNING AND ARTIFICIAL INTELLIGENCE

THIS BOOK IS A COMPREHENSIVE GUIDE TO UNDERSTANDING AND IMPLEMENTING CUTTING EDGE MACHINE LEARNING AND DEEP LEARNING TECHNIQUES USING PYTHON PROGRAMMING LANGUAGE WRITTEN WITH BOTH BEGINNERS AND EXPERIENCED DEVELOPERS IN MIND THIS BOOK PROVIDES A THOROUGH OVERVIEW OF THE FOUNDATIONS OF MACHINE LEARNING AND DEEP LEARNING INCLUDING MATHEMATICAL FUNDAMENTALS OPTIMIZATION ALGORITHMS AND NEURAL NETWORKS STARTING WITH THE BASICS OF PYTHON PROGRAMMING THIS BOOK GRADUALLY BUILDS UP TO MORE ADVANCED TOPICS SUCH AS ARTIFICIAL NEURAL NETWORKS CONVOLUTIONAL NEURAL NETWORKS AND GENERATIVE ADVERSARIAL NETWORKS EACH CHAPTER IS FILLED WITH CLEAR EXPLANATIONS PRACTICAL EXAMPLES AND STEP BY STEP TUTORIALS THAT ALLOW READERS TO GAIN A DEEP UNDERSTANDING OF THE UNDERLYING PRINCIPLES OF MACHINE LEARNING AND DEEP LEARNING THROUGHOUT THE BOOK READERS WILL ALSO LEARN HOW TO USE POPULAR PYTHON LIBRARIES AND PACKAGES INCLUDING NUMPY PANDAS SCIKIT LEARN TENSORFLOW AND KERAS TO BUILD AND TRAIN POWERFUL MACHINE LEARNING AND DEEP LEARNING MODELS FOR A VARIETY OF REAL WORLD APPLICATIONS SUCH AS REGRESSION AND CLASSIFICATION K MEANS SUPPORT VECTOR MACHINES AND RECOMMENDER SYSTEMS WHETHER YOU ARE A SEASONED DATA SCIENTIST OR A BEGINNER LOOKING TO ENTER THE WORLD OF MACHINE LEARNING THIS BOOK IS THE ULTIMATE RESOURCE FOR MASTERING THESE CUTTING EDGE TECHNOLOGIES AND TAKING YOUR SKILLS TO THE NEXT LEVEL HIGH SCHOOL LEVEL OF MATHEMATICAL KNOWLEDGE AND ALL LEVELS INCLUDING ENTRY LEVEL OF PROGRAMMING SKILLS ARE GOOD TO START ALL PYTHON CODES ARE AVAILABLE AT GITHUB COM TABLE OF CONTENTS 1 INTRODUCTION 1 1 ARTIFICIAL INTELLIGENCE MACHINE LEARNING AND DEEP LEARNING 1 2 WHOM THIS BOOK IS FOR 1 3

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A STEP BY STEP GUIDE TO GET STARTED WITH MACHINE LEARNING KEY FEATURES UNDERSTAND DIFFERENT TYPES OF MACHINE LEARNING LIKE SUPERVISED UNSUPERVISED SEMI SUPERVISED AND REINFORCEMENT LEARNING LEARN HOW TO IMPLEMENT MACHINE LEARNING ALGORITHMS EFFECTIVELY AND EFFICIENTLY GET FAMILIAR WITH THE VARIOUS LIBRARIES TOOLS FOR MACHINE LEARNING DESCRIPTION SHOULD I CHOOSE SUPERVISED LEARNING OR REINFORCEMENT LEARNING WHICH ALGORITHM IS BEST SUITED FOR MY APPLICATION HOW DOES DEEP LEARNING ADVANCE THE CAPACITIES OF PROBLEM SOLVING IF YOU HAVE FOUND YOURSELF ASKING THESE QUESTIONS THIS BOOK IS SPECIALLY DEVELOPED FOR YOU THE BOOK WILL HELP READERS UNDERSTAND THE CORE CONCEPTS OF MACHINE LEARNING AND TECHNIQUES TO EVALUATE ANY MACHINE LEARNING MODEL WITH EASE THE BOOK STARTS WITH THE IMPORTANCE OF MACHINE LEARNING BY ANALYZING ITS IMPACT ON THE GLOBAL LANDSCAPE THE BOOK ALSO COVERS SUPERVISED AND UNSUPERVISED ML ALONG WITH REINFORCEMENT LEARNING IN SUBSEQUENT CHAPTERS THE BOOK EXPLORES THESE TOPICS IN EVEN GREATER DEPTH EVALUATING THE PROS AND CONS OF EACH AND EXPLORING IMPORTANT TOPICS SUCH AS BIAS VARIANCE TRADEOFF CLUSTERING AND DIMENSIONALITY REDUCTION THE BOOK ALSO EXPLAINS MODEL EVALUATION TECHNIQUES SUCH AS CROSS VALIDATION AND GRIDSEARCHCV THE BOOK ALSO FEATURES MIND MAPS WHICH HELP ENHANCE THE LEARNING PROCESS BY MAKING IT EASIER TO LEARN AND RETAIN INFORMATION THIS BOOK IS A ONE STOP SOLUTION FOR COVERING BASIC ML CONCEPTS IN DETAIL AND THE PERFECT STEPPING STONE TO BECOMING AN EXPERT IN ML AND DEEP LEARNING AND EVEN APPLYING THEM TO DIFFERENT PROFESSIONS WHAT YOU WILL LEARN UNDERSTAND IMPORTANT CONCEPTS TO FULLY GRASP THE IDEA OF SUPERVISED LEARNING GET FAMILIAR WITH THE BASICS OF UNSUPERVISED LEARNING AND SOME OF ITS ALGORITHMS LEARN HOW TO ANALYZE THE PERFORMANCE OF YOUR MACHINE LEARNING MODELS EXPLORE THE DIFFERENT METHODOLOGIES OF REINFORCEMENT LEARNING LEARN HOW TO IMPLEMENT DIFFERENT TYPES OF NEURAL NETWORKS WHO THIS BOOK IS FOR THIS BOOK IS AIMED AT THOSE WHO ARE NEW TO MACHINE LEARNING AND DEEP LEARNING OR WANT TO EXTEND THEIR ML KNOWLEDGE ANYONE LOOKING TO APPLY ML TO DATA IN THEIR PROFESSION WILL BENEFIT GREATLY FROM THIS BOOK TABLE OF CONTENTS 1 INTRODUCTION

TO MACHINE LEARNING 2 SUPERVISED LEARNING 3 UNSUPERVISED LEARNING 4 MODEL EVALUATION 5 REINFORCEMENT LEARNING 6 NEURAL NETWORKING AND DEEP LEARNING 7 APPENDIX MACHINE LEARNING QUESTIONS

UNLOCK THE SECRETS OF DATA SCIENCE AND MACHINE LEARNING WITH OUR COMPREHENSIVE PYTHON COURSE DESIGNED TO TAKE YOU FROM BASICS TO COMPLEX ALGORITHMS EFFORTLESSLY KEY FEATURES NAVIGATE THROUGH PYTHON'S MACHINE LEARNING LIBRARIES EFFECTIVELY LEARN EXPLORATORY DATA ANALYSIS AND DATA SCRUBBING TECHNIQUES DESIGN AND EVALUATE MACHINE LEARNING MODELS WITH PRECISION BOOK DESCRIPTION THE COURSE STARTS BY SETTING THE FOUNDATION WITH AN INTRODUCTION TO MACHINE LEARNING PYTHON AND ESSENTIAL LIBRARIES ENSURING YOU GRASP THE BASICS BEFORE DIVING DEEPER IT THEN PROGRESSES THROUGH EXPLORATORY DATA ANALYSIS DATA SCRUBBING AND PRE MODEL ALGORITHMS EQUIPPING YOU WITH THE SKILLS TO UNDERSTAND AND PREPARE YOUR DATA FOR MODELING THE JOURNEY CONTINUES WITH DETAILED WALKTHROUGHS ON CREATING EVALUATING AND OPTIMIZING MACHINE LEARNING MODELS COVERING KEY ALGORITHMS SUCH AS LINEAR AND LOGISTIC REGRESSION SUPPORT VECTOR MACHINES K NEAREST NEIGHBORS AND TREE BASED METHODS EACH SECTION IS DESIGNED TO BUILD UPON THE PREVIOUS REINFORCING LEARNING AND APPLICATION OF CONCEPTS WRAPPING UP THE COURSE INTRODUCES THE NEXT STEPS INCLUDING AN INTRODUCTION TO PYTHON FOR NEWCOMERS ENSURING A COMPREHENSIVE UNDERSTANDING OF MACHINE LEARNING APPLICATIONS WHAT YOU WILL LEARN ANALYZE DATASETS FOR INSIGHTS SCRUB DATA FOR MODEL READINESS UNDERSTAND KEY ML ALGORITHMS DESIGN AND VALIDATE MODELS APPLY LINEAR AND LOGISTIC REGRESSION UTILIZE K NEAREST NEIGHBORS AND SVMS WHO THIS BOOK IS FOR THIS COURSE IS IDEAL FOR ASPIRING DATA SCIENTISTS AND PROFESSIONALS LOOKING TO INTEGRATE MACHINE LEARNING INTO THEIR WORKFLOWS A BASIC UNDERSTANDING OF PYTHON AND STATISTICS IS BENEFICIAL

MASTER THE WORLD OF PYTHON AND MACHINE LEARNING WITH THIS INCREDIBLE 4 IN 1 BUNDLE ARE YOU INTERESTED IN BECOMING A PYTHON PRO DO YOU WANT TO LEARN MORE ABOUT THE INCREDIBLE WORLD OF MACHINE LEARNING AND WHAT IT CAN DO FOR YOU THEN KEEP READING CREATED WITH THE BEGINNER IN MIND THIS POWERFUL BUNDLE DELVES INTO THE FUNDAMENTALS BEHIND PYTHON AND MACHINE LEARNING FROM BASIC CODE AND MATHEMATICAL FORMULAS TO COMPLEX NEURAL NETWORKS AND ENSEMBLE MODELING INSIDE YOU'LL DISCOVER EVERYTHING YOU NEED TO KNOW TO GET STARTED WITH PYTHON AND MACHINE LEARNING AND BEGIN YOUR JOURNEY TO SUCCESS IN BOOK ONE MACHINE LEARNING FOR BEGINNERS YOU'LL LEARN WHAT IS ARTIFICIAL INTELLIGENCE REALLY AND WHY IS IT SO POWERFUL CHOOSING THE RIGHT KIND OF MACHINE LEARNING MODEL FOR YOU AN INTRODUCTION TO STATISTICS REINFORCEMENT LEARNING AND ENSEMBLE MODELING

RANDOM FORESTS AND DECISION TREES IN BOOK TWO MACHINE LEARNING MATHEMATICS YOU WILL LEARN THE FUNDAMENTAL CONCEPTS OF MACHINE LEARNING ALGORITHMS UNDERSTAND THE FOUR FUNDAMENTAL TYPES OF MACHINE LEARNING ALGORITHM MASTER THE CONCEPT OF STATISTICAL LEARNING LEARN EVERYTHING YOU NEED TO KNOW ABOUT NEURAL NETWORKS AND DATA PIPELINES MASTER THE CONCEPT OF GENERAL SETTING OF LEARNING IN BOOK THREE LEARNING PYTHON YOU WILL DISCOVER HOW TO INSTALL RUN AND UNDERSTAND PYTHON ON ANY OPERATING SYSTEM A COMPREHENSIVE INTRODUCTION TO PYTHON PYTHON BASICS AND WRITING CODE WRITING LOOPS CONDITIONAL STATEMENTS EXCEPTIONS AND MORE PYTHON EXPRESSIONS AND THE BEAUTY OF INHERITANCES AND IN BOOK FOUR PYTHON MACHINE LEARNING YOU WILL LEARN THE FUNDAMENTALS OF MACHINE LEARNING MASTER THE NUANCES OF 12 OF THE MOST POPULAR AND WIDELY USED MACHINE LEARNING ALGORITHMS BECOME FAMILIAR WITH DATA SCIENCE TECHNOLOGY DIVE INTO THE FUNCTIONING OF SCIKIT LEARN LIBRARY AND DEVELOP MACHINE LEARNING MODELS UNCOVER THE SECRETS OF THE MOST CRITICAL ASPECT OF DEVELOPING A MACHINE LEARNING MODEL DATA PRE PROCESSING AND TRAINING TESTING SUBSETS WHETHER YOU'RE A COMPLETE BEGINNER OR A PROGRAMMER LOOKING TO IMPROVE YOUR SKILLSET THIS BUNDLE IS YOUR ALL IN ONE SOLUTION TO MASTERING THE WORLD OF PYTHON AND MACHINE LEARNING SO DON'T WAIT IT'S NEVER BEEN EASIER TO LEARN BUY NOW TO BECOME A MASTER OF PYTHON AND MACHINE LEARNING TODAY

THIS BOOK IS DESIGNED FOR UNDERGRADUATES POSTGRADUATES AND PROFESSIONALS WHO WANT TO HAVE A FIRM GRIP ON THE FUNDAMENTAL PRINCIPLES OF AI AND ML ARTIFICIAL INTELLIGENCE AI IS A BROAD AREA OF KNOWLEDGE WHICH HAS PERCOLATED INTO EVERY ASPECT OF HUMAN LIFE MACHINE LEARNING ALGORITHMS ARE CONSIDERED TO BE A SUBSET OF AI THEORY MATHEMATICS AND CODING ARE THREE ASPECTS TO ANY TOPIC IN AI THIS BOOK COVERS THE MOST RELEVANT TOPICS IN THE FIELD OF ARTIFICIAL INTELLIGENCE AND MACHINE LEARNING ML THE SUBDIVISIONS OF MACHINE LEARNING ARE SUPERVISED UNSUPERVISED AND REINFORCEMENT LEARNING ALL THREE ARE COVERED IN SUFFICIENT DEPTH ONE VERY IMPORTANT AND UPCOMING FIELD OF APPLICATION IS NATURAL LANGUAGE PROCESSING NLP A WHOLE SECTION OF THE BOOK HAS BEEN DEVOTED TO THIS THE BOOK COVERS THE CONCEPTUAL MATHEMATICAL AND NUMERICAL ANALYSIS OF THE IMPORTANT ML ALGORITHMS AND THEIR PRACTICAL APPLICATIONS THE TOPICS COVERED INCLUDE AI SEARCH ALGORITHMS CLASSICAL MACHINE LEARNING DEEP LEARNING THEORY AND POPULAR NETWORKS NATURAL LANGUAGE PROCESSING NLP AND REINFORCEMENT LEARNING NUMERICAL EXAMPLES AND LUCID EXPLANATIONS GIVE THE READER AN EASY ENTRY INTO THE WORLD OF AI AND ML

ARTIFICIAL INTELLIGENCE AND MACHINE LEARNING ARE CONSIDERED AS HOT TECHNOLOGIES OF THIS CENTURY AS THESE TECHNOLOGIES MOVE FROM RESEARCH LABS TO ENTERPRISE DATA CENTERS THE

NEED FOR SKILLED PROFESSIONALS IS CONTINUOUSLY ON THE RISE THIS BOOK IS INTENDED FOR IT AND BUSINESS PROFESSIONALS LOOKING TO GAIN PROFICIENCY IN THESE TECHNOLOGIES BUT ARE TURNED OFF BY THE COMPLEX MATHEMATICAL EQUATIONS THIS BOOK IS ALSO USEFUL FOR STUDENTS IN THE AREA OF ARTIFICIAL INTELLIGENCE AND MACHINE LEARNING TO GAIN A CONCEPTUAL UNDERSTANDING OF THE ALGORITHMS AND GET AN INDUSTRY PERSPECTIVE THIS BOOK IS AN IDEAL PLACE TO START YOUR JOURNEY AS CORE CONCEPTS OF MACHINE LEARNING ALGORITHMS ARE EXPLAINED IN PLAIN ENGLISH USING ILLUSTRATIONS DATA TABLES AND EXAMPLES INTUITIVE MEANING OF THE MATHEMATICS BEHIND POPULAR MACHINE LEARNING ALGORITHMS EXPLAINED COVERS CLASSICAL MACHINE LEARNING NEURAL NETWORKS AND DEEP LEARNING ALGORITHMS AT A TIME WHEN THE IT INDUSTRY IS FOCUSING ON RESKILLING ITS VAST HUMAN RESOURCES MACHINE INTELLIGENCE IS A VERY TIMELY PUBLICATION IT HAS A SIMPLE APPROACH THAT BUILDS UP FROM BASICS WHICH WOULD HELP SOFTWARE ENGINEERS AND STUDENTS LOOKING TO LEARN ABOUT THE FIELD AS WELL AS THOSE WHO MIGHT HAVE STARTED OFF WITHOUT THE BENEFIT OF A STRUCTURED INTRODUCTION OR SOUND BASICS HIGHLY RECOMMENDED SIDDHARTHA S FOUNDER AND CEO OF INTAIN FINANCIAL TECHNOLOGY STARTUP SURESH HAS WRITTEN A VERY ACCESSIBLE BOOK FOR PRACTITIONERS THE BOOK HAS DEPTH YET AVOIDS EXCESSIVE MATHEMATICS THE COVERAGE OF THE SUBJECT IS VERY GOOD AND HAS MOST OF THE CONCEPTS REQUIRED FOR UNDERSTANDING MACHINE LEARNING IF SOMEONE IS LOOKING FOR DEPTH FOR SENIOR MANAGEMENT IT WILL PROVIDE A GOOD OVERVIEW IT IS WELL WRITTEN I HIGHLY RECOMMEND IT WHEE TECK ONG CEO OF TRUSTED SOURCE AND VP OF SINGAPORE COMPUTER SOCIETY

ARTIFICIAL INTELLIGENCE AND ITS VARIOUS COMPONENTS ARE RAPIDLY ENGULFING ALMOST EVERY PROFESSIONAL INDUSTRY SPECIFIC FEATURES OF AI THAT HAVE PROVEN TO BE VITAL SOLUTIONS TO NUMEROUS REAL WORLD ISSUES ARE MACHINE LEARNING AND DEEP LEARNING THESE INTELLIGENT AGENTS UNLOCK HIGHER LEVELS OF PERFORMANCE AND EFFICIENCY CREATING A WIDE SPAN OF INDUSTRIAL APPLICATIONS HOWEVER THERE IS A LACK OF RESEARCH ON THE SPECIFIC USES OF MACHINE DEEP LEARNING IN THE PROFESSIONAL REALM MACHINE LEARNING AND DEEP LEARNING IN REAL TIME APPLICATIONS PROVIDES EMERGING RESEARCH EXPLORING THE THEORETICAL AND PRACTICAL ASPECTS OF MACHINE LEARNING AND DEEP LEARNING AND THEIR IMPLEMENTATIONS AS WELL AS THEIR ABILITY TO SOLVE REAL WORLD PROBLEMS WITHIN SEVERAL PROFESSIONAL DISCIPLINES INCLUDING HEALTHCARE BUSINESS AND COMPUTER SCIENCE FEATURING COVERAGE ON A BROAD RANGE OF TOPICS SUCH AS IMAGE PROCESSING MEDICAL IMPROVEMENTS AND SMART GRIDS THIS BOOK IS IDEALLY DESIGNED FOR RESEARCHERS ACADEMICIANS SCIENTISTS INDUSTRY EXPERTS SCHOLARS IT PROFESSIONALS ENGINEERS AND STUDENTS SEEKING CURRENT RESEARCH ON THE MULTIFACETED USES AND IMPLEMENTATIONS OF MACHINE LEARNING AND DEEP LEARNING ACROSS THE GLOBE

BOOK DESCRIPTION ARTIFICIAL INTELLIGENCE AI IS A POPULAR AREA WITH AN EMPHASIS ON CREATING INTELLIGENT MACHINES THAT CAN REASON EVALUATE AND UNDERSTAND THE SAME WAY AS HUMANS IT IS USED EXTENSIVELY ACROSS MANY FIELDS SUCH AS IMAGE RECOGNITION ROBOTICS LANGUAGE PROCESSING HEALTHCARE FINANCE AND MORE HANDS ON ARTIFICIAL INTELLIGENCE WITH TENSORFLOW GIVES YOU A RUNDOWN OF ESSENTIAL AI CONCEPTS AND THEIR IMPLEMENTATION WITH TENSORFLOW ALSO HIGHLIGHTING DIFFERENT APPROACHES TO SOLVING AI PROBLEMS USING MACHINE LEARNING AND DEEP LEARNING TECHNIQUES IN ADDITION TO THIS THE BOOK COVERS ADVANCED CONCEPTS SUCH AS REINFORCEMENT LEARNING GENERATIVE ADVERSARIAL NETWORKS GANS AND MULTIMODAL LEARNING ONCE YOU HAVE GRASPED ALL THIS YOU LL MOVE ON TO EXPLORING GPU COMPUTING AND NEUROMORPHIC COMPUTING ALONG WITH THE LATEST TRENDS IN QUANTUM COMPUTING YOU LL WORK THROUGH CASE STUDIES THAT WILL HELP YOU EXAMINE AI APPLICATIONS IN THE IMPORTANT AREAS OF COMPUTER VISION HEALTHCARE AND FINTECH AND ANALYZE THEIR DATASETS IN THE CONCLUDING CHAPTERS YOU LL BRIEFLY INVESTIGATE POSSIBLE DEVELOPMENTS IN AI THAT WE CAN EXPECT TO SEE IN THE FUTURE BY THE END OF THIS BOOK YOU WILL BE WELL VERSED WITH THE ESSENTIAL CONCEPTS OF AI AND THEIR IMPLEMENTATION USING TENSORFLOW WHAT YOU WILL LEARN EXPLORE THE CORE CONCEPTS OF AI AND ITS DIFFERENT APPROACHES USE THE TENSORFLOW FRAMEWORK FOR SMART APPLICATIONS IMPLEMENT VARIOUS MACHINE AND DEEP LEARNING ALGORITHMS WITH TENSORFLOW DESIGN SELF LEARNING RL SYSTEMS AND IMPLEMENT GENERATIVE MODELS PERFORM GPU COMPUTING EFFICIENTLY USING BEST PRACTICES BUILD ENTERPRISE GRADE APPS FOR COMPUTER VISION NLP AND HEALTHCARE WHO THIS BOOK IS FOR HANDS ON ARTIFICIAL INTELLIGENCE WITH TENSORFLOW IS FOR YOU IF YOU ARE A MACHINE LEARNING DEVELOPER DATA SCIENTIST AI RESEARCHER OR ANYONE WHO WANTS TO BUILD ARTIFICIAL INTELLIGENCE APPLICATIONS USING TENSORFLOW YOU NEED TO HAVE SOME WORKING KNOWLEDGE OF MACHINE LEARNING TO GET THE MOST OUT OF THIS BOOK

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

THE BOOK PRESENTS A COLLECTION OF PEER REVIEWED ARTICLES FROM THE INTERNATIONAL CONFERENCE ON ADVANCES AND APPLICATIONS OF ARTIFICIAL INTELLIGENCE AND MACHINE LEARNING ICAAAIML 2020 THE BOOK COVERS RESEARCH IN ARTIFICIAL INTELLIGENCE MACHINE LEARNING AND DEEP LEARNING APPLICATIONS IN HEALTHCARE AGRICULTURE BUSINESS AND SECURITY THIS VOLUME CONTAINS RESEARCH PAPERS FROM ACADEMICIANS RESEARCHERS AS WELL AS STUDENTS THERE ARE ALSO PAPERS ON CORE CONCEPTS OF COMPUTER NETWORKS INTELLIGENT SYSTEM DESIGN AND DEPLOYMENT REAL TIME SYSTEMS WIRELESS SENSOR NETWORKS SENSORS AND SENSOR NODES SOFTWARE ENGINEERING AND IMAGE PROCESSING THIS BOOK WILL BE A VALUABLE RESOURCE FOR STUDENTS ACADEMICS AND PRACTITIONERS IN THE INDUSTRY WORKING ON AI APPLICATIONS

FUNDAMENTALS AND METHODS OF MACHINE AND DEEP LEARNING THE BOOK PROVIDES A PRACTICAL APPROACH BY EXPLAINING THE CONCEPTS OF MACHINE LEARNING AND DEEP LEARNING ALGORITHMS EVALUATION OF METHODOLOGY ADVANCES AND ALGORITHM DEMONSTRATIONS WITH APPLICATIONS

OVER THE PAST TWO DECADES THE FIELD OF MACHINE LEARNING AND ITS SUBFIELD DEEP LEARNING HAVE PLAYED A MAIN ROLE IN SOFTWARE APPLICATIONS DEVELOPMENT ALSO IN RECENT RESEARCH STUDIES THEY ARE REGARDED AS ONE OF THE DISRUPTIVE TECHNOLOGIES THAT WILL TRANSFORM OUR FUTURE LIFE BUSINESS AND THE GLOBAL ECONOMY THE RECENT EXPLOSION OF DIGITAL DATA IN A WIDE VARIETY OF DOMAINS INCLUDING SCIENCE ENGINEERING INTERNET OF THINGS BIOMEDICAL HEALTHCARE AND MANY BUSINESS SECTORS HAS DECLARED THE ERA OF BIG DATA WHICH CANNOT BE ANALYSED BY CLASSICAL STATISTICS BUT BY THE MORE MODERN ROBUST MACHINE LEARNING AND DEEP LEARNING TECHNIQUES SINCE MACHINE LEARNING LEARNS FROM DATA RATHER THAN BY PROGRAMMING HARD CODED DECISION RULES AN ATTEMPT IS BEING MADE TO USE MACHINE LEARNING TO MAKE COMPUTERS THAT ARE ABLE TO SOLVE PROBLEMS LIKE HUMAN EXPERTS IN THE FIELD THE GOAL OF THIS BOOK IS TO PRESENT A PRACTICAL APPROACH BY EXPLAINING THE CONCEPTS OF MACHINE LEARNING AND DEEP LEARNING ALGORITHMS WITH APPLICATIONS SUPERVISED MACHINE LEARNING ALGORITHMS ENSEMBLE MACHINE LEARNING ALGORITHMS FEATURE SELECTION DEEP LEARNING TECHNIQUES AND THEIR APPLICATIONS ARE DISCUSSED ALSO INCLUDED IN THE EIGHTEEN CHAPTERS IS UNIQUE INFORMATION WHICH PROVIDES A CLEAR UNDERSTANDING OF CONCEPTS BY USING ALGORITHMS AND CASE STUDIES ILLUSTRATED WITH APPLICATIONS OF MACHINE LEARNING AND DEEP LEARNING IN DIFFERENT DOMAINS INCLUDING DISEASE PREDICTION SOFTWARE DEFECT PREDICTION ONLINE TELEVISION ANALYSIS MEDICAL IMAGE PROCESSING ETC EACH OF THE CHAPTERS BRIEFLY DESCRIBED BELOW PROVIDES BOTH A CHOSEN APPROACH AND ITS IMPLEMENTATION AUDIENCE RESEARCHERS AND ENGINEERS IN ARTIFICIAL INTELLIGENCE COMPUTER SCIENTISTS AS WELL AS SOFTWARE DEVELOPERS

THIS BOOK IS WRITTEN BOTH FOR READERS ENTERING THE FIELD AND FOR PRACTITIONERS WITH A BACKGROUND IN AI AND AN INTEREST IN DEVELOPING REAL WORLD APPLICATIONS THE BOOK IS A GREAT RESOURCE FOR PRACTITIONERS AND RESEARCHERS IN BOTH INDUSTRY AND ACADEMIA AND THE DISCUSSED CASE STUDIES AND ASSOCIATED MATERIAL CAN SERVE AS INSPIRATION FOR A VARIETY OF PROJECTS AND HANDS ON ASSIGNMENTS IN A CLASSROOM SETTING I WILL CERTAINLY KEEP THIS BOOK AS A PERSONAL RESOURCE FOR THE COURSES I TEACH AND STRONGLY RECOMMEND IT TO MY STUDENTS DR CARLOTTA DOMENICONI ASSOCIATE PROFESSOR COMPUTER SCIENCE DEPARTMENT GMU THIS BOOK OFFERS A CURRICULUM FOR INTRODUCING INTERPRETABILITY TO MACHINE LEARNING AT EVERY STAGE THE AUTHORS PROVIDE COMPELLING EXAMPLES THAT A CORE TEACHING PRACTICE LIKE LEADING INTERPRETIVE DISCUSSIONS CAN BE TAUGHT AND LEARNED BY TEACHERS AND SUSTAINED EFFORT AND WHAT BETTER WAY TO STRENGTHEN THE QUALITY OF AI AND MACHINE LEARNING OUTCOMES I HOPE THAT THIS BOOK WILL BECOME A PRIMER FOR TEACHERS DATA SCIENCE EDUCATORS AND ML DEVELOPERS AND TOGETHER WE PRACTICE THE ART OF INTERPRETIVE MACHINE LEARNING ANUSHA DANDAPANI CHIEF DATA AND ANALYTICS OFFICER UNICC AND ADJUNCT FACULTY

NYU THIS IS A WONDERFUL BOOK I'M PLEASED THAT THE NEXT GENERATION OF SCIENTISTS WILL FINALLY BE ABLE TO LEARN THIS IMPORTANT TOPIC THIS IS THE FIRST BOOK I'VE SEEN THAT HAS UP TO DATE AND WELL ROUNDED COVERAGE THANK YOU TO THE AUTHORS DR CYNTHIA RUDIN PROFESSOR OF COMPUTER SCIENCE ELECTRICAL AND COMPUTER ENGINEERING STATISTICAL SCIENCE AND BIOSTATISTICS BIOINFORMATICS LITERATURE ON EXPLAINABLE AI HAS UP UNTIL NOW BEEN RELATIVELY SCARCE AND FEATURED MAINLY MAINSTREAM ALGORITHMS LIKE SHAP AND LIME THIS BOOK HAS CLOSED THIS GAP BY PROVIDING AN EXTREMELY BROAD REVIEW OF VARIOUS ALGORITHMS PROPOSED IN THE SCIENTIFIC CIRCLES OVER THE PAST 5-10 YEARS THIS BOOK IS A GREAT GUIDE TO ANYONE WHO IS NEW TO THE FIELD OF XAI OR IS ALREADY FAMILIAR WITH THE FIELD AND IS WILLING TO EXPAND THEIR KNOWLEDGE A COMPREHENSIVE REVIEW OF THE STATE OF THE ART EXPLAINABLE AI METHODS STARTING FROM VISUALIZATION INTERPRETABLE METHODS LOCAL AND GLOBAL EXPLANATIONS TIME SERIES METHODS AND FINISHING WITH DEEP LEARNING PROVIDES AN UNPARALLELED SOURCE OF INFORMATION CURRENTLY UNAVAILABLE ANYWHERE ELSE ADDITIONALLY NOTEBOOKS WITH VIVID EXAMPLES ARE A GREAT SUPPLEMENT THAT MAKES THE BOOK EVEN MORE ATTRACTIVE FOR PRACTITIONERS OF ANY LEVEL OVERALL THE AUTHORS PROVIDE READERS WITH AN ENORMOUS BREADTH OF COVERAGE WITHOUT LOSING SIGHT OF PRACTICAL ASPECTS WHICH MAKES THIS BOOK TRULY UNIQUE AND A GREAT ADDITION TO THE LIBRARY OF ANY DATA SCIENTIST DR ANDREY SHARAPOV PRODUCT DATA SCIENTIST EXPLAINABLE AI EXPERT AND SPEAKER FOUNDER OF EXPLAINABLE AI XAI GROUP

YEAH, REVIEWING A BOOKS  
**STATISTICAL AND MACHINE LEARNING DATA MINING** COULD  
 ENSURE YOUR NEAR CONNECTIONS  
 LISTINGS. THIS IS JUST ONE OF  
 THE SOLUTIONS FOR YOU TO  
 BE SUCCESSFUL. AS  
 UNDERSTOOD, CAPABILITY DOES  
 NOT RECOMMEND THAT YOU  
 HAVE WONDERFUL POINTS.  
 COMPREHENDING AS WITHOUT  
 DIFFICULTY AS PACT EVEN  
 MORE THAN ADDITIONAL WILL  
 ALLOW EACH SUCCESS.

ADJACENT TO, THE STATEMENT

AS WITHOUT DIFFICULTY AS

KEENNESS OF THIS STATISTICAL

AND MACHINE LEARNING DATA

MINING CAN BE TAKEN AS

WITHOUT DIFFICULTY AS PICKED

TO ACT.

1. HOW DO I KNOW WHICH EBOOK  
 PLATFORM IS THE BEST FOR ME?

2. FINDING THE BEST EBOOK

PLATFORM DEPENDS ON YOUR

READING PREFERENCES AND DEVICE

COMPATIBILITY. RESEARCH

DIFFERENT PLATFORMS, READ

USER REVIEWS, AND EXPLORE

THEIR FEATURES BEFORE MAKING  
 A CHOICE.

3. ARE FREE EBOOKS OF GOOD  
 QUALITY? YES, MANY  
 REPUTABLE PLATFORMS OFFER  
 HIGH-QUALITY FREE EBOOKS,  
 INCLUDING CLASSICS AND PUBLIC  
 DOMAIN WORKS. HOWEVER,  
 MAKE SURE TO VERIFY THE  
 SOURCE TO ENSURE THE EBOOK  
 CREDIBILITY.

4. CAN I READ EBOOKS WITHOUT  
 AN EREADER? ABSOLUTELY!  
 MOST EBOOK PLATFORMS OFFER  
 WEB-BASED READERS OR MOBILE

APPS THAT ALLOW YOU TO READ eBOOKS ON YOUR COMPUTER, TABLET, OR SMARTPHONE.	LEARNING DATA MINING PDF? THIS IS DEFINITELY GOING TO SAVE YOU TIME AND CASH IN SOMETHING YOU SHOULD THINK ABOUT.	VARIED COLLECTION OF PDF eBOOKS, WE ENDEAVOR TO ENABLE READERS TO EXPLORE, ACQUIRE, AND ENgross THEMSELVES IN THE WORLD OF LITERATURE.
5. HOW DO I AVOID DIGITAL EYE STRAIN WHILE READING eBOOKS? TO PREVENT DIGITAL EYE STRAIN, TAKE REGULAR BREAKS, ADJUST THE FONT SIZE AND BACKGROUND COLOR, AND ENSURE PROPER LIGHTING WHILE READING eBOOKS.	HELLO TO MOVIE2.ALLPLAYNEWS.COM, YOUR STOP FOR A VAST COLLECTION OF STATISTICAL AND MACHINE LEARNING DATA MINING PDF eBOOKS. WE ARE ENTHUSIASTIC ABOUT MAKING THE WORLD OF LITERATURE REACHABLE TO ALL, AND OUR PLATFORM IS DESIGNED TO PROVIDE YOU WITH A EFFORTLESS AND DELIGHTFUL FOR TITLE eBOOK GETTING EXPERIENCE.	IN THE WIDE REALM OF DIGITAL LITERATURE, UNCOVERING SYSTEMS ANALYSIS AND DESIGN ELIAS M AWAD SANCTUARY THAT DELIVERS ON BOTH CONTENT AND USER EXPERIENCE IS SIMILAR TO STUMBLING UPON A HIDDEN TREASURE. STEP INTO MOVIE2.ALLPLAYNEWS.COM, STATISTICAL AND MACHINE LEARNING DATA MINING PDF eBOOK DOWNLOADING HAVEN
6. WHAT ARE THE ADVANTAGES OF INTERACTIVE eBOOKS? INTERACTIVE eBOOKS INCORPORATE MULTIMEDIA ELEMENTS, QUIZZES, AND ACTIVITIES, ENHANCING THE READER ENGAGEMENT AND PROVIDING A MORE IMMERSIVE LEARNING EXPERIENCE.	AT MOVIE2.ALLPLAYNEWS.COM, OUR AIM IS SIMPLE: TO DEMOCRATIZE INFORMATION AND PROMOTE A PASSION FOR READING STATISTICAL AND MACHINE LEARNING DATA MINING. WE BELIEVE THAT EVERY PERSON SHOULD HAVE ACCESS TO SYSTEMS STUDY AND PLANNING ELIAS M AWAD eBOOKS, COVERING DIFFERENT	THAT INVITES READERS INTO A REALM OF LITERARY MARVELS. IN THIS STATISTICAL AND MACHINE LEARNING DATA MINING ASSESSMENT, WE WILL EXPLORE THE INTRICACIES OF THE PLATFORM, EXAMINING ITS FEATURES, CONTENT VARIETY, USER INTERFACE, AND THE OVERALL READING EXPERIENCE IT PLEDGES.
7. STATISTICAL AND MACHINE LEARNING DATA MINING IS ONE OF THE BEST BOOKS IN OUR LIBRARY FOR FREE TRIAL. WE PROVIDE COPY OF STATISTICAL AND MACHINE LEARNING DATA MINING IN DIGITAL FORMAT, SO THE RESOURCES THAT YOU FIND ARE RELIABLE. THERE ARE ALSO MANY eBOOKS OF RELATED WITH STATISTICAL AND MACHINE LEARNING DATA MINING.	GENRES, TOPICS, AND INTERESTS. BY SUPPLYING STATISTICAL AND MACHINE LEARNING DATA MINING AND A	AT THE CENTER OF MOVIE2.ALLPLAYNEWS.COM LIES A VARIED COLLECTION THAT
8. WHERE TO DOWNLOAD STATISTICAL AND MACHINE LEARNING DATA MINING ONLINE FOR FREE? ARE YOU LOOKING FOR STATISTICAL AND MACHINE		

SPANS GENRES, MEETING THE VORACIOUS APPETITE OF EVERY READER. FROM CLASSIC NOVELS THAT HAVE ENDURED THE TEST OF TIME TO CONTEMPORARY PAGE-TURNERS, THE LIBRARY THROBS WITH VITALITY. THE SYSTEMS ANALYSIS AND DESIGN ELIAS M AWAD OF CONTENT IS APPARENT, PRESENTING A DYNAMIC ARRAY OF PDF eBOOKS THAT OSCILLATE BETWEEN PROFOUND NARRATIVES AND QUICK LITERARY GETAWAYS.

ONE OF THE CHARACTERISTIC FEATURES OF SYSTEMS ANALYSIS AND DESIGN ELIAS M AWAD IS THE COORDINATION OF GENRES, CREATING A SYMPHONY OF READING CHOICES. AS YOU NAVIGATE THROUGH THE SYSTEMS ANALYSIS AND DESIGN ELIAS M AWAD, YOU WILL COME ACROSS THE COMPLICATION OF OPTIONS — FROM THE ORGANIZED COMPLEXITY OF SCIENCE FICTION TO THE RHYTHMIC SIMPLICITY OF ROMANCE. THIS VARIETY ENSURES THAT EVERY READER, IRRESPECTIVE OF THEIR LITERARY TASTE, FINDS

STATISTICAL AND MACHINE LEARNING DATA MINING WITHIN THE DIGITAL SHELVES.

IN THE DOMAIN OF DIGITAL LITERATURE, BURSTINESS IS NOT JUST ABOUT ASSORTMENT BUT ALSO THE JOY OF DISCOVERY. STATISTICAL AND MACHINE LEARNING DATA MINING EXCELS IN THIS INTERPLAY OF DISCOVERIES.

REGULAR UPDATES ENSURE THAT THE CONTENT LANDSCAPE IS EVER-CHANGING, PRESENTING READERS TO NEW AUTHORS, GENRES, AND PERSPECTIVES. THE UNEXPECTED FLOW OF LITERARY TREASURES MIRRORS THE BURSTINESS THAT DEFINES HUMAN EXPRESSION.

AN AESTHETICALLY ATTRACTIVE AND USER-FRIENDLY INTERFACE SERVES AS THE CANVAS UPON WHICH STATISTICAL AND MACHINE LEARNING DATA MINING ILLUSTRATES ITS LITERARY MASTERPIECE. THE WEBSITE'S DESIGN IS A REFLECTION OF THE THOUGHTFUL CURATION OF CONTENT, OFFERING AN EXPERIENCE THAT IS BOTH VISUALLY ENGAGING AND

FUNCTIONALLY INTUITIVE. THE

BURSTS OF COLOR AND IMAGES BLEND WITH THE INTRICACY OF LITERARY CHOICES, CREATING A SEAMLESS JOURNEY FOR EVERY VISITOR.

THE DOWNLOAD PROCESS ON STATISTICAL AND MACHINE LEARNING DATA MINING IS A SYMPHONY OF EFFICIENCY. THE USER IS ACKNOWLEDGED WITH A SIMPLE PATHWAY TO THEIR CHOSEN eBOOK. THE BURSTINESS IN THE DOWNLOAD SPEED ENSURES THAT THE

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